Role of Perfusion Index in prediction of Post- Spinal Hypotension in patients scheduled for caesarean section: A prospective observational cohort study.

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For the award of the degree of MD in the subject of

Anaesthesiology and Critical Care Medicine

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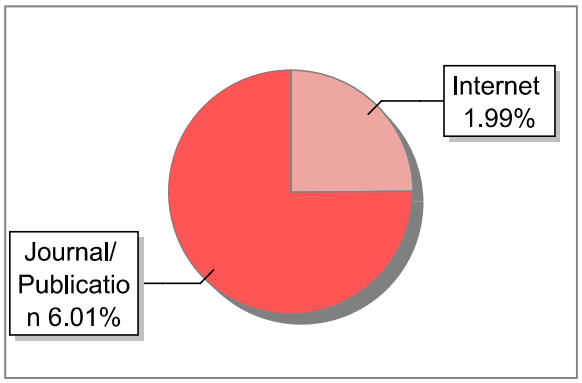

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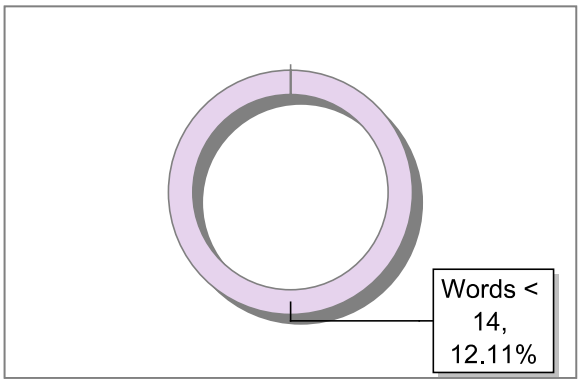

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LIST OF ABBREVATIONS

Abbrevation	Expanded form
PSH	Post-spinal Hypotension
LSCS	Lower segment caesarean section
SAB	Sub arachnoid block
PI	Perfusion Index
SVR	Systemic vascular Resistance
NOS	Nitric oxide synthase
ASA	American Society of anaesthesiology
PVI	Pleth variability Index
BMI	Body mass index
HR	Heart rate
SBP	Systolic blood pressure
DBP	Diastolic Blood Pressure
CC	Correlation coefficient
ROC	Receiver operative charecteristic curve
AUC	Area under curve
NPV	Negative Predictive Value

PPV	**Positive Predictive Value, Pulse pressure variation**
PCOS	**Polycystic ovarian syndrome**
IV	**Intravenous**
SD	**Standard deviation**
KG	**Kilogram**

INTRODUCTION

Neuraxial anaesthesia is the main technique for conducting Lower Segment Caesarean Section (LSCS) as it avoids polypharmacy, reduces risk of foetal depression and handling of difficult airway in a parturient. There are several techniques for administering neuraxial anaesthesia for LSCS like spinal, epidural, combined spinal-epidural and continuous spinal anaesthesia. Still, the most favoured method is the single shot spinal anaesthesia which is simple, reliable and provides a rapid onset of anaesthesia. Hyperbaric local anaesthetic drug like Bupivacaine 0.5%, with or without adjuvants, is deposited in the subarachnoid space in L3-L4 or L4-L5 space. The local anaesthetic acts by blocking the sodium channels in the nerve roots arising from the spinal cord. Smaller nerve roots like preganglionic sympathetic fibres (B fibres, 1-3 µm, minimally myelinated) are more sensitive to local anaesthetic blockade. Among the sensory nerves, C fibres (0.3-1 µm, unmyelinated), which conduct cold temperature sensation are blocked more readily or earlier than A-delta fibres(1-4 µm, myelinated) which conduct pinprick sensation. A beta fibres(5-12 µm, myelinated) which conduct touch sensation are last to be affected among the sensory fibres. The larger A-alpha motor fibres are more resistant than any sensory fibres. Regression of block follows reverse order.

Post-spinal hypotension(PSH) is a common and clinically important problem, occurring in up to 70% of the caesarean section. (1) There is no exact definition of maternal hypotension, most publications define hypotension as 20% decrease in systolic blood pressure from baseline, or a systolic blood pressure below 90 mmHg. The incidence of PSH is reported at 53% in healthy pregnancy and 25% in preeclampsia. (2) Hypotension causes problems for both the mother and foetus including maternal nausea, vomiting, dizziness, rarely loss of consciousness, cardiac arrest and foetal compromise. (3) The common adverse maternal side effects of dizziness, nausea and vomiting makes the experience unpleasant for the mother. In severe cases, PSH can

result in unconsciousness, pulmonary aspiration, apnoea and cardiac arrest. Severe and sustained hypotension can impair uteroplacental perfusion and induce foetal hypoxia, acidosis and neonatal depression or injury. The challenge for the anaesthetist during C-section is not just to ensure safety of the mother and foetus, but also make it a pleasant experience for the patient. Predicting development of PSH and implementing measures for its mitigation are an integral component of anaesthesia care in LSCS cases

Although various measures are used to mitigate hypotension, it still has an incidence as high as 30%. Fluid loading is often used to prevent hypotension after administration of SAB. However, in recent years, it has been criticized because it may be associated with adverse effects such as volume overload, besides rare side effects of anaphylaxis and coagulopathy. Further, it may not be successful with presence of hypotension in 40% of patients even after fluid loading. (4) More recent publications have shown that administering the volume load concomitantly with spinal anaesthesia (co-loading) may be a better approach, than preloading. (5) Various vasopressors like ephedrine and phenylephrine may also be used to prevent or treat PSH. However, there can be exaggerated increase after administration of in blood pressure in some cases.

There is a paucity of literature on readily available, non-invasive modality to predict PSH. In case, the Post-spinal hypotension can be predicted, it will be easier to individualize fluid administration and pre-emptively administer vasopressors in such cases. Looking at the pathophysiology, PSH may be caused by decrease in systemic vascular resistance, secondary to blockade of peripheral (T1-L2) and cardiac (T1-T4) sympathetic fibre. Venous and arterial vasodilation reduced preload (venous return, as 75% blood volume resides in veins) and after load (systemic vascular resistance), respectively. The vasodilatory changes after neuraxial blockade which affect cardiac output depend on each patient's baseline sympathetic tone(i.e.

higher sympathetic tone in the elderly equates to a greater hemodynamic change) and extent of the sympathectomy (i.e height of the block).

Perfusion index (PI) is a simple measurement which indicates the strength of the pulse signal or the pulsatile strength. It is a good indicator of systemic vascular resistance and may be able to identify parturient at risk of hypotension. (6) Plethysmography may be used to do a simple bedside monitoring of perfusion index with assessment of ratio of pulsatile blood flow to the non-pulsatile blood flow in a patient's peripheral tissue such as finger-tip, toe or ear lobe to indicate pulse strength at the sensor site. It varies from 0.02% for very weak pulse to 20% for extremely strong pulse. (7) Perfusion index has been used to assess onset of regional blockade by detecting regional vasodilation. It has also been used to assess peripheral perfusion and to predict hypotension in trauma patients and those with critical illness. (4) Change in baseline peripheral vascular tone in the state of pregnancy may influence the development of Post Spinal Hypotension. However, association of perfusion index with post spinal hypotension and its predictive value in Indian Obstetric population is still understudied.

Hence, this prospective cohort study was conducted with the primary objective of finding co-relation of baseline perfusion index with development of PSH in patients with normal uncomplicated pregnancy undergoing LSCS. Further, we also assessed perfusion index in patients with preeclampsia. We have also compared the normal pregnancy patients with the preeclamptic patients in term of perfusion index and postspinal hypotension. As secondary objective, we also studied changes in perfusion index with respect to other variables such as crystalloids, oxytocin in normal and preeclamptic patients and correlation of baseline Perfusion index with foetal outcomes in terms of APGAR score.

REVIEW OF LITERATURE

POST-SPINAL HYPOTENSION (PSH) IN LOWER SEGMENT CAESAREAN SECTION

Spinal anaesthesia is a type of regional anaesthesia that has been practiced for obstetric anaesthesia since the beginning of 20th century. Despite the simplicity and lower maternal mortality risk as compared to general anaesthesia, a very common complication observed is Post-spinal Hypotension. Hypotension after subarachnoid block in parturient before caesarean section has a varied incidence ranging from 7.4% to 80%. (1,8,9) In a recent study conducted in 2020, the incidence of post spinal hypotension among mothers who underwent a caesarean section was observed to be 64%. (10)

PATHOPHYSIOLOGY OF PSH IN PARTURIENTS

Normal physiological changes in healthy pregnancy include increase in blood volume and cardiac output along with decrease in peripheral vascular disease. Various factors may contribute to the variation in systemic vascular resistance (SVR) in parturient. In pregnant patients, increased sensitivity of nerve fibres to local anesthetics may be present, which leads to rapid onset of sympatholysis. (11, 12) Subarachnoid block administered to facilitate caesarean section may cause a further decrease in vascular tone due to vasodilation and increase the pooling of blood in periphery, thereby leading to hypotension. The aorto-caval compression due to the gravid uterus may further lead to greater incidence and severity of post-spinal hypotension in pregnant patients.

In spite of the hypotension developing so frequently following SAB for LSCS, there is no definite monitoring system which may predict the likelihood of developing post spinal hypotension.

If the sympathetic block produced is higher, it inhibits the compensatory mechanisms to decreased venous return like Baroreceptor reflex and increases cardio-inhibitory reflexes like Bezold -Jarisch , which may further complicate the clinical scenario. (13, 14) Subarachnoid block can cause hypotension and bradycardia by If normal cardiac output is maintained, systemic vascular resistance should decrease only 15-18% after neuraxial blockade in healthy normovolemic patients even with near total sympathectomy.

MEASURES TO REDUCE HYPOTENSION AFTER SAB FOR CAESAREAN SECTION :

Various measures have been instituted to decrease the development of hypotension after subarachnoid block.

In the 1980s and 1990s, recognising the peripheral vasodilation and pooling of blood in lower limbs, various researchers sought to decrease this by application of compression bandages or stockings over the lower limbs, while some gave a Head up position of 20 degrees to decrease this effect. (15, 16)

In 2001, **Emmett RS et al**. studied techniques for preventing hypotension during spinal anaesthesia for caesarean section. They found four interventions which were effective to prevent post spinal hypotension in caesarean section like Pre loading of colloid 20ml/kg , pre-emptive administration of colloid, administration of ephedrine and lower limb compression. (7)

In 2014, **Shridhar et al** found that parturient undergoing elective LSCS who received Ringer lactate (RL) preloading had lesser number of hypotensive episodes and lesser severe degree of hypotension than those without volume preload. (5)

During pregnancy, there is an upregulation of nitric oxide synthase (NOS)in the uterine artery which makes the artery less sensitive to vasopressor. The first choice of vasopressor in obstetric

anaesthesia has been ephedrine for many decades based on animal studies demonstrating that ephedrine had the least negative effects on the fetal circulation. Ephedrine has both direct (alpha and beta receptor agonist) and an indirect mechanism of action(release of noradrenaline from presynaptic nerve terminals). It has a slow onset of action. Another potent vasoconstrictor, Phenylephrine is a short acting drug acting via alpha adrenoreceptors in the peripheral circulation. The potency ratio of phenylephrine to ephedrine has been shown to be 80:1. (17)

In 2017, **Dusitkasem S et al .** compared efficacy of phenylephrine and ephedrine in treatment of spinal-induced hypotension in high risk pregnancy. (18) They concluded that there was no clear evidence that either medication was more effective at maintaining maternal blood pressure. There was no statistically significant differences in umbilical arterial pH, umbilical venous pH, incidence of foetal acidosis, Apgar scores or maternal hypotension when comparing maternal phenylephrine and ephedrine use.

WHAT IS PERFUSION INDEX?

Perfusion index (PI) is monitored non-invasively by plethysmography. may be used to do a simple bedside monitoring of perfusion index with assessment of ratio of pulsatile blood flow to the non-pulsatile blood flow in a patient's peripheral tissue such as finger-tip, toe or ear lobe to indicate pulse strength at the sensor site. The PI varies from 0.02% for very weak pulse to 20% for extremely strong pulse. (7) The principle of plethysmography exploits the principle of absorption of light at different wavelengths (660nm and 940 nm) between the source and detector of the measuring instrument. So, a rise in perfusion index may signal a decrease in vasomotor tone of the vascular system.

The perfusion index varies depending on patient's physiological conditions and site of monitoring. Because of this variability, each patient should establish his own ''normal'' perfusion index for a given location and use this for monitoring purpose. The PI value is relative

to a particular monitoring site,(eg.the finger tip or toe) of each patient as physiological conditions vary between monitoring sites and individual patients at the time of monitoring. Due to local vasoconstriction or vasodilation in the skin at the monitoring site, there can be changes in PI. It is decreased in vasoconstriction and increased in vasodilation. This is due to changes in the volume of oxygenated blood flow in microcapillaries of the skin. The measurement of PI is independent of other physiological variables such as temperature, oxygen consumption, heart rate variability or arterial oxygen saturation.

Studies have shown that an increase in PI is an early indicator that epidural or general anaesthesia or regional anaesthesia has initiated peripheral blood vessel dilatation, which typically occurs before the onset of anaesthesia. Absence of this spike would also help to identify the lack of anaesthetic effect.

In 2021, **Abdelhamid B et al**, in a prospective observational cohort study assessed correlation between preoperative PI, PVI, Dicpleth and percentage decrease in mean arterial blood pressure after anaesthesia induction in 95 ASA I and II adult patients who were scheduled for elective surgery. (19) The percent decrease in MAP after anaesthesia correlated with baseline PI ($r = –0.45$, $P < 0.001$), PVI ($r = 0.45$, $P = 0.001$) and Dicpleth ($r = 0.16$, $P = 0.12$). The PI cut-off value was ≤ 3.03 for a patient at risk for post-induction hypotension with 77.8% sensitivity, 75% specificity, positive and negative predictive values of 74.5% and 78.3%, respectively. They concluded that pre-anaesthetic PI and PVI < 3.03 and > 17, respectively, have a good ability to predict those at risk of developing post-induction hypotension in adult patients undergoing elective surgery under general anaesthesia.

In 2022, **Min J Y et al**, in a prospective observational cohort study, assessed the Perfusion Index of the ear as a predictor of hypotension following the Induction of anaesthesia in 30 patients with hypertension. (20) The perfusion index and pleth variability index were measured

using the ear and finger. Blood pressure and heart rate was recorded to monitor hypotension. After insertion of the supraglottic airway, 20 patients developed postinduction hypotension. Those who developed hypotension showed a significantly lower preoperative perfusion index of the ear. They concluded that preoperative perfusion index of the ear could predict post-induction hypotension in patients with hypertension.

As we learn more about PI, more clinical applications are being discovered. To make informed patient management decision, physicians often need to be aware of changes in perfusion index, peripheral perfusion and circulatory status. This is especially true in patients who are in critical conditions or who are anaesthetised, undergoing surgery or in labour.

HAS PERFUSION INDEX BEEN USED TO PREDICT POST SPINAL HYPOTENSION?

In obstetric population, a rise in total blood volume and cardiac output along with a decrease in vascular tone may produce a higher perfusion index than normal patients. Administering a subarachnoid block with subsequent sympathectomy may further lead to peripheral pooling, which decreases the venous return, exacerbating the hypotension. The more the PI, the higher is the possibility of developing hypotension.

In **2013, Toyama et al.** conducted a study to correlate baseline perfusion index with the incidence of post spinal hypotension. (21) They found out that a cut-off PI value of 3.5 identified parturient at risk for spinal anaesthesia induced hypotension with a sensitivity of 81% and a specificity of 86%.Hence they concluded that higher baseline PI was associated with profound hypotension and that baseline perfusion index could predict that incidence of spinal anaesthesia induced hypotension during caesarean delivery.

In **2017, Xu Z et al** studied the relationship between baseline toe PI and incidence of hypotension after induction of spinal anesthesia in 100 parturients undergoing elective cesarean

delivery. (22)They concluded that baseline toe PI were inversely proportional to the incidence of post spinal hypotension.

In **2018, Kuwata et al.** conducted a study to assess if pleth variability index can predict spinal anaesthesia -induced hypotension in patients undergoing caaesarean delivery. (23) They concluded that pleth variability index after spinal anaesthesia was a good predictor of spinal anaesthesia induced hypotension in patients undergoing caesarean delivery. In addition they also concluded that changes in perfusion index after spinal anaesthesia has the potential to predict hypotension.

In **2019**, **Mallawaarachchi RP et** al studied 109 pregnant mothers undergoing elective cesarean section, they observed that PI correlated with decrease in systolic and mean arterial pressure. (24) The perfusion index appeared to increase significantly and more quickly in parturients with significant hypotension.

In **2021, Lee S et al** in Korean population to find out the association of perfusion index with risk of intraoperative hypothermia observed that a low baseline PI <1.8 was the factor most related to the development of hypothermia. (25)

In **2021, Yu C et al** conducted a systematic review to find predictors and predictive value of various factors predicting spinal anesthesia induce hypotension during elective cesarean section. In the 38 prospective observational studies of 3086 patients, they observed that the environmental and individual factors were responsible for variability in outcomes, with limited value of peripheral perfusion indices, in contrast to the previous literature.(26)

IN INDIAN LITERATURE

ARE THERE STUDIES ON USE OF PERFUSION INDEX TO PREDICT POST SPINAL HYPOTENSION IN PARTURIENT WITH NORMAL PREGNANCY ?

The utility of perfusion index to predict post spinal hypotension in Indian Obstetric population is still understudied. We observed studies published in the North, South and East India.

In **2017**, **Duggappa DR et al**. in a prospective observational study in South India, divided 126 parturients into 2 groups on the basis of baseline perfusion index. (27) They observed that hypotension following spinal anaesthesia in elective LSCS was more frequent(71.42% versus 10.5%), if baseline perfusion index was more than 3.5. The sensitivity and specificity of baseline PI of 3.5 to predict hypotension was 69.84% and 89.29%, respectively.

In a prospective observational study in **2022, Jabarulla R et al ,** found out that a baseline perfusion index of > 1.75 can predict post spinal hypotension in women undergoing lower segment caesarean section. They also found out that the incidence of post spinal hypotension was high as 93% in such patients with a baseline perfusion index of > 1.75. (28)

In **2022, Lal J et al** conducted a prospective, double blind, observational study in full term parturient in the age group of 18 to 35 years. They concluded that in the group with a baseline perfusion index of > 3.5, the incidence of post spinal hypotension was 73.3% while it was 40% in the group with baseline perfusion index of < 3.5. (29)

In 2022, **Nandini MG et al** in a prospective observational study concluded that in those women with a baseline perfusion index > 3.5 there was significantly higher incidence of post spinal hypotension (79.16%) and in those women with a perfusion index of < 3.5, the incidence of post spinal hypotension was about 33.33%. Their study also showed that in those women

with a baseline perfusion index of 3.9, there was a higher risk of post spinal hypotension in the initial 10-12 minutes following administration of sub arachnoid block. (30)

In **2022**, **Inamanmelluri R** et al in a prospective observational study on 50 parturient in Eastern India, found that post- spinal hypotension was 28.6% and 82.8%, when the baseline PI was below or above 2.85, respectively. (6) The requirement of sympathomimetics was higher in parturients with PI>2.85. They concluded that a cut off PI value of more than 2.85 can identify parturients at risk for central neuraxial blockade induced hypotension, with sensitivity of 80% and a specificity of 75%. ($p<0.001$)

ARE THERE STUDIES ON USE OF PERFUSION INDEX TO PREDICT POST SPINAL HYPOTENSION IN PREGNANCY PATIENTS WITH PRE-ECLAMPSIA IN INDIAN CONTEXT?

In **2022, Malavika et al** in a prospective, double blind observational study on 100 parturient with pre-eclampsia undergoing LSCS under sub-arachnoid block found that occurrence of PSH was 40.9% when the PI was less than 4.5, while it was 94.6% when the PI was >4.25. (31) The sensitivity and specificity of baseline PI of 4.25 to predict hypotension was 74.5% and 89.7% respectively.

FOETAL OUTCOMES AND PERFUSION INDEX

Regarding foetal outcomes and influence of perfusion index, studies are scarce.

In 2008, Felice et al conducted a prospective cohort study to understand the link between early neonatal respiratory complications in newborns from elective caesarean section with maternal perfusion index. (32) The study came to a conclusion that decreased perfusion index in pulse oximetry in pre-anaesthesia phase of elective caesarean section is a maternal predictor of

increased neonatal morbidity(respiratory complications) and is related to subclinical placental inflammatory disease.

RESEARCH GAP

There is limited data on perfusion index values at baseline in parturient with normal pregnancy undergoing LSCS under SAB in central India and correlation with Baseline Perfusion index. Further, in patients with pre-eclampsia, with an altered physiological state of the vascular system like presence of pre-eclampsia, it is not known how the perfusion index varies. There is limited literature on variation of PI with perioperative variables like co-loading of crystalloids, oxytocin administration in obstetric population and foetal APGAR scores. Since, Perfusion Index is a non-invasive, it may have utility in rapid prediction of possibility of Post-spinal hypotension after administration of a subarachnoid block in this precious group of obstetric population.

MATERIAL AND METHODS

AIM:

To find correlation of perfusion index with development of post spinal hypotension in patients with normal uncomplicated pregnancy as well as those with preeclampsia undergoing lower segment caesarean section.

OBJECTIVE:

Primary objective:

1. To find correlation of baseline perfusion index with post spinal hypotension defined as percentage fall in blood pressure in normal uncomplicated pregnancy.
2. To find correlation of baseline values of PI with post spinal hypotension defined as percentage fall in blood pressure in patients with preeclampsia.
3. Comparison of incidence of post spinal hypotension and baseline perfusion index values in normal versus pre-eclamptic parturient.

Secondary objective:

1. To study trend in perfusion index with respect to other variables such as crystalloids, oxytocin in normal and preeclamptic patients.
2. To study co-relation of baseline perfusion index with foetal outcomes in terms of Apgar Score.

METHODOLOGY:

STUDY DESIGN: Observational prospective cohort study in normal and preeclampsia patients.

STUDY SETTING: This study was conducted at the Department of Anesthesiology and Critical Care, AIIMS Bhopal over a period of 18 months after obtaining institute ethical clearance (Ref number-IHEC-PGR/2021/PG/Jul/02). The department is known to provide anaesthesia and related care for more than 6000 patients in an academic year which include patients from various surgical departments like general surgery, Neuro surgery, paediatric surgery, CTVS, orthopedic surgery, spine surgery, OMFS, Eye surgery, ENT, Obstetrics and Gynecology.

INCLUSION CRITERIA OF NORMAL PREGNANCY COHORT:

Pregnant patients with singleton fetus undergoing caesarean section

Inclusion Criteria:

1. Adult female population.

2.Gestational age more than 36 weeks and less than 41 weeks.

3. American Society of Anesthesiologists Physical Status (ASA PS) classification- Grade II and III.

4.Patient administered Subarachnoid block for anaesthesia.

INCLUSION CRITERIA OF PARTURIENT WITH PRE-ECLAMPSIA STUDY COHORT:

In addition to the above criteria, we included parturient who were diagnosed with pre-eclampsia as per definition of the Federation of obstetrics and Gynecology Society of India (FOGSI). (33)

EXCLUSION CRITERIA FOR BOTH THE COHORTS:

1. Preterm pregnancy, Pregnancy with IUGR.

2. Failed subarachnoid block or patient given General anaesthesia for caesarean section.
3. Patients with co morbidities like pre-existing cardiac dysfunction, Cardiomyopathy, congestive cardiac failure, Cerebrovascular disease, uncontrolled gestational diabetes.
4. Obese patient with prepregnant BMI > 30Kg/M^2
5. Any placental disorder associated with increased blood loss- Abruptio placenta, placenta praevia or post partum hemorrhage (PPH) more than expected.
6. Foetal distress or Known Intrauterine death.
7. Patients with contraindications to SAB.
8. Patient refusal.
9. Patients with shivering or cold peripheries which make it difficult to assess plethysmography.

METHODOLOGY:

In this observational prospective cohort study, all the subjects were assessed preoperatively and were explained about the study. We also gave a patient information sheet to the patient to give detailed information. Written informed consent was taken from each patient prior to start of the study. The study started once the patient came in the preoperative room.

In the preoperative room, a dedicated study investigator noted the demographic data (age, BMI) and the history (presence of comorbidities). The antenatal history was noted including Gravidity, parity, living children, history of abortion.

The patient was then wheeled into operative room and all the standard American Society of Anesthesiologists monitors were attached. The pulse oximeter was attached in right index finger. In our institute, as a routine, all patients are kept in a supine position with a 15-degree wedge under the right hip to avoid aorto-caval compression. Baseline perfusion index was documented. A dedicated study investigator noted down the baseline heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), oxygen saturation (SpO_2) and Perfusion index (PI). The perfusion index was noted as displayed in real time by Mindray Monitor installed in the obstetric OT.

Intravenous crystalloid (Ringer's lactate or Norma Saline) was started at the discretion of the attending anesthesiologist. All above mentioned parameters of HR, SBP, DBP, MAP, SpO2, PI were recorded every three minutes after start of intravenous fluids, also keeping a record of trend of pulsatility index with crystalloid.

The patient was then given sub-arachnoid block at the discretion of the attending anesthesiologist. The study investigator noted the volume and dose of Bupivacaine.

Post-spinal Hypotension was defined as fall in systolic blood pressure by more 20% from the

baseline. (9) As a routine, intermittent boluses of Injection Ephedrine (6mg) are given in case post-spinal hypotension is present. We noted down the total dose and number of times, this rescue medication was given. If there was bradycardia with hypotension, Injection Atropine 0.6 mg intravenous was given

Perfusion index was measured in the upper limb and values were taken every 3 minutes till the surgery was completed. Special note was made of the dose of oxytocin administered and effect on perfusion index. Once the baby was delivered, the foetal APGAR score was noted with inputs from the pediatric team.

STATISTICAL ANALYSIS

Data was entered in MS Excel analysed in R software. For summarizing nominal data, frequency and percentage was used and numerical data was summarized by using either mean with standard deviation or median with interquartile range depending on distribution of data.

We estimated Correlation Coefficient (CC) between two numerical variables on Perfusion Index and change in SBP/DBP/MAP by either using Pearson or Spearman's method. We also estimated confidence interval of Correlation Coefficient.

Incidence of Post Spinal Hypotension is presented as proportion and its 95% confidence interval and stratified and compared across groups such as normal and preeclamptic parturient. Difference in the incidence is tested by Chi Square test. Difference in mean PI across various parameters such as Hypotension, Crystalloids, Oxytocin is tested either by parametric tests such as T test or ANOVA tests or non-parametric tests such as Mann Whitney Test or Kruskal- Walli's test.

We constructed Receiver Operative Characteristic Curve (ROC) for PI and outcome of PSH and also calculated Area Under Curve (AUC).

Optimum cut-off for using PI to predict PSH was determined and diagnostic properties of Perfusion Index such as sensitivity, specificity, Negative predictive value (NPV), Positive

predictive value (PPV) were calculated.

Trend in numerical variables across time were tested by using Paired T Test or repeated measures ANOVA test.

SAMPLE SIZE:

The incidence of post spinal hypotension in lower segment caesarean section in the world ranges from 7.4 to 74.1 %. Considering an incidence of 9.6%, the sample size is coming to 133 women with normal pregnancies. (34) Consecutive parturient diagnosed with pre-eclampsia who came for LSCS and were fulfilling the inclusion and exclusion criteria were recruited till 25% of the normal pregnancy cohort size was achieved, adding a 5% drop out rate, the total sample size of patients with preeclampsia came to be 35.

OBSERVATIONS AND RESULTS

DESCRIPTIVE STATISTICS:

A total of 138 patients with normal pregnancy were initially recruited for the study from February 2020 to July 2023. However, 5 parturient were excluded due to conversion to general anesthesia, while in 3 patients, consent for participation was withdrawn after initial recruitment. In the cohort with preeclampsia, 40 patients were recruited. In three patients, General anesthesia had to be given due to inadequate sub arachnoid block while two withdrew consent after initial recruitment.

Hence final data analysis was done in 133 women with normal pregnancy (Group A) and 35 patients with preeclampsia (Group B).

DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANTS

1. **AGE**: Out of the total 133 pregnant patients with normal pregnancy, maximum number of women were in the age group of 21-25 years. In the preeclamptic cohort (Group B) maximum women in the age group of 26-30 years. The mean age of parturient in group A was 26.10 ± 4.85, while that in group B was 28.66 ± 5.02 years. A statistically significant association was seen of higher age with presence of preeclampsia (p value 0.006)(Table 1)

Table 1- Distribution of women according to age in Group A (Normal Pregnancy) and Group B (Preeclampsia)

Age	Group A (%)	Group B (%)
19-20 years	3 (2.3%)	0 (0.0%)
21-25 years	61 (45.9%)	10 (28.6%)
26-30 years	46 (34.6%)	15 (42.9%)
31-35 years	17 (12.8%)	5 (14.3%)
36-40 years	6 (4.5%)	5 (14.3%
Total	133 (100%)	35 (100%)

Unpaired 't' test applied. P value = 0.006, Significant

2. Body Mass Index (BMI):

The mean BMI in Group A women was 26.39 ± 3.22 kg/m^2 and in Group B women, it was 25.55 ± 3.41 kg/m^2. The difference was found to be statistically not significant (P=0.173). The d**istribution of women according to BMI** in Group A (Normal Pregnancy) and Group B (Preeclampsia) is as shown in Table 2.

Table 2- Distribution of women according to BMI in Group A (Normal Pregnancy) and Group B (Preeclampsia)

BMI	**Group A (%)**	**Group B (%)**
Normal	42 (31.6%)	16 (45.7%)
Overweight	76 (57.1%)	15 (42.9%)
Obese	15 (11.3%)	4 (11.4%)
Total	133 (100%)	35 (100%)

Unpaired 't' test applied. P value = 0.173, Not Significant

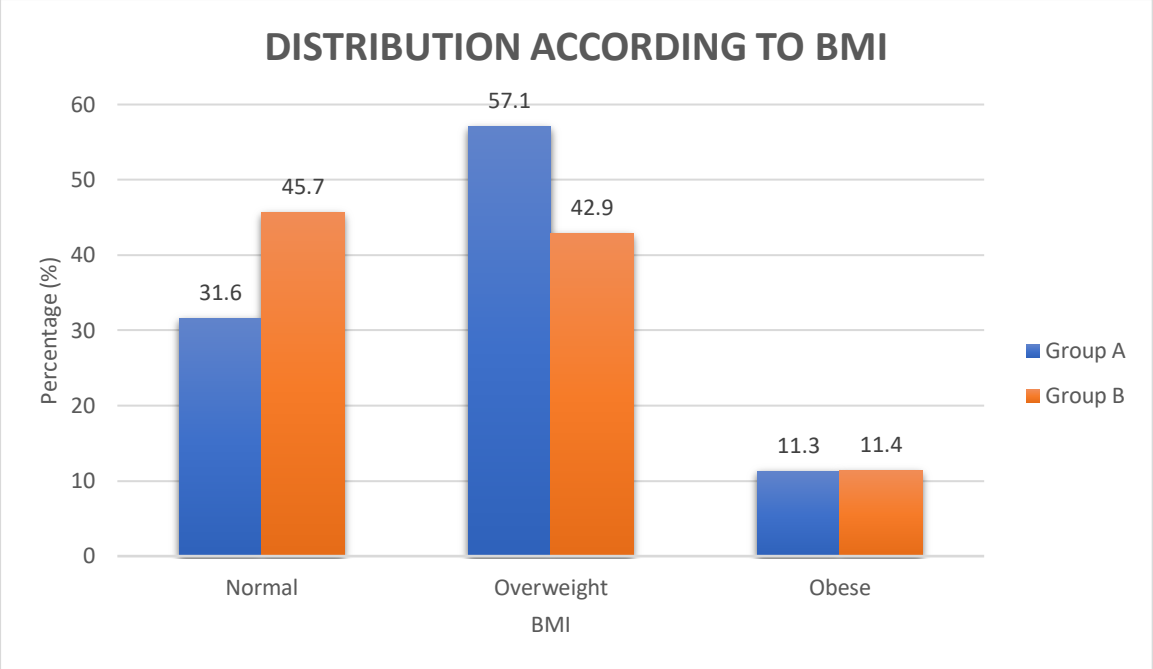

Figure 1: Bar diagram shows the distribution according to BMI

3. OBSTETRIC HISTORY:

Gestational Age

The distribution of women according to Gestational age in Group A (Normal Pregnancy) and Group B (Preeclampsia) is as as shown in Table-3. Fisher's Exact test showed that proportion of women with gestational age <37 or >=37 weeks was comparable between the two groups (P=0.136).

Table 3- Distribution of women according to gestational age in Group A (Normal Pregnancy) and Group B (Preeclampsia)

Gestational age	Group A (%)	Group B (%)	Fisher's Exact Test P value
<37 weeks	32 (24.1%)	13 (37.1%)	0.136, NS
>=37 weeks	101 (75.9%)	22 (62.9%)	0.136, NS
Total	133 (100%)	35 (100%)	

Gravida

The distribution of women according to gravida status in Group A (Normal Pregnancy) and Group B (Preeclampsia) is as shown in Table-4. There was a statistically significant association between gravidity and the groups (P=0.001), which shows that the gravidity is dependent on the groups. Lower gravidity was more prevalent in Group A women, while higher gravidity was more prevalent in Group B women.

Table 4 - Distribution of women according to gravidity in Group A (Normal Pregnancy) and Group B (Preeclampsia)

Gravidity	**Group A (%)**	**Group B (%)**
1.0	73 (54.9%)	16 (45.7%)
2.0	37 (27.8%)	2 (5.7%)
3.0	19 (14.3%)	11 (31.4%)
4.0	4 (3.0%)	6 (17.1%)
Total	133 (100%)	35 (100%)

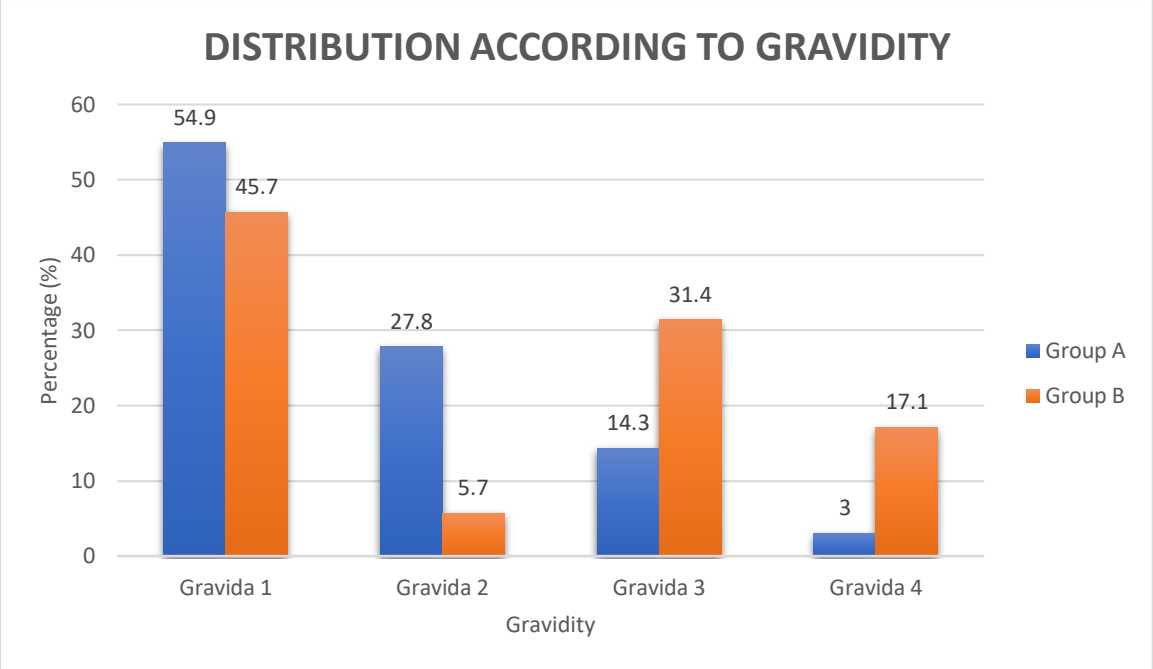

Figure 2: Bar diagram shows the distribution according to gravidity

Parity

The distribution of women according to parity in Group A (Normal Pregnancy) and Group B (Preeclampsia) is as shown in Table-5. There was a statistically significant association between parity and the groups (P=0.001), which shows that the parity is dependent on the groups.

Lower parity was more prevalent in Group A women, while higher parity was more prevalent in Group B women.

Table 5- Distribution of women according to parity in Group A (Normal Pregnancy) and Group B (Preeclampsia)

Parity	**Group A (%)**	**Group B (%)**
Nullipara	79(59.4%)	17(48.6%)
Para 1	44(33.1%)	10(28.6%)
Para 2	10(7.5%)	3(8.6%)
Para 3	0(0.0%)	5(14.3%)
Total	133(100%)	35(100%)

In patients with normal pregnancy (Group A), 79 (59.4%) were nulliparous; 44 (33.1%) and 10(7.5%) were of parity 1 and 2, respectively. No living children were present in 80 women;

Living children and Abortions

In the normal pregnancy cohort, 45 (33.8%) women had one living child; and 8 (6%) women had 2 living children. Of the total participants, 18 (13.5%) women had history of previous abortions.

In the preeclamptic cohort, no living children were present in 17 patients; 11 (31.4%) women had one living child; and 7 (20%) women had 2 living children. In this cohort, history of abortion was present in 15 (42.9%) women.

There was a statistically significant association between abortion and the groups (P=0.001), which shows that the abortion is dependent on the groups. Abortions were significantly higher in Group B women compared to Group A women.

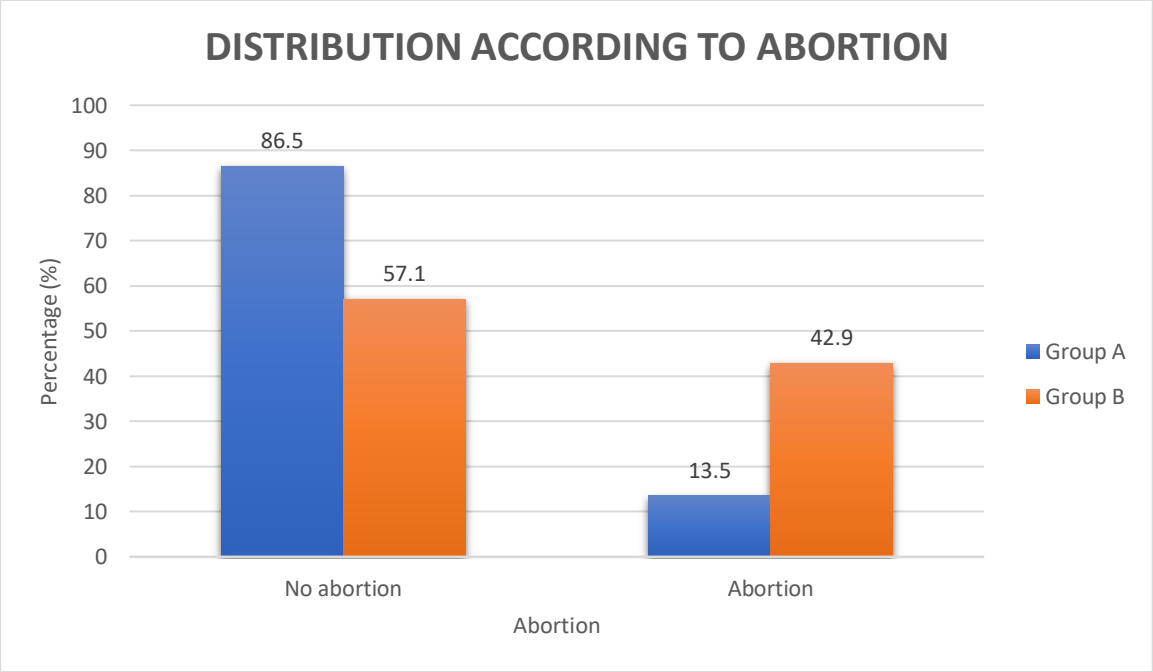

Figure 3: Bar diagram shows the distribution according to abortion

4. AMERICAN SOCIETY OF ANESTHESIOLOGISTS PHYSICAL STATUS CLASSIFICATION (ASA PS)

In **Group A**, all patients were of ASA PS II 133 (100%). In **Group B**, 32 (91.4%) women were in ASA PS II, while 3 parturient were (8.6%) were of ASA PS III.

5. COMORBIDITIES:

NORMAL PREGNANCY:

In **Group A**, hypothyroidism was seen in 13 (9.8%); gestational diabetes mellitus in 7 (5.3%); anemia in 6 (4.5%); sickle cell anemia in 4 (3%); bronchial asthma in 4 (3%); hypertension in 3 (2.3%); obesity in 3 (2.3%); hyperthyroidism in 2 (1.5%); PCOS in 2 (1.5%); seizure disorder in 2 (1.5%); systemic lupus erythematosus in 1 (0.8%); thalassemia in 1 (0.8%); vitiligo in 1 (0.8%); and chronic hypertension in 1 (0.8%).

PRE-ECLAMPSIA:

None of the comorbidities seen in Group A women were seen in Group B women. The proportion of preeclampsia was significantly higher in Group B women compared to Group A women (P=0.001), while the proportional comparison of other comorbidities was found to be statistically not significant for each of the comorbidities (P>0.05).

Table 6- Distribution of women according to comorbidities in Group A (Normal Pregnancy) and Group B (Pre-eclampsia)

Comorbidities	**Group A (%)**	**Group B (%)**	**Fisher's Exact Test P value**
Hypothyroidism	13 9.8%	0 0.0%	0.072, NS
Gestational diabetes mellitus	7	0	0.347, NS

Comorbidities	**Group A (%)**	**Group B (%)**	**Fisher's Exact Test P value**
	5.3%	0.0%	
Anemia	6 4.5%	0 0.0%	0.346, NS
Sickle cell anemia	4 3.0%	0 0.0%	0.581, NS
Bronchial asthma	4 3.0%	0 0.0%	0.581, NS
Hypertension	3 2.3%	0 0.0%	1.000, NS
Obesity	3 2.3%	0 0.0%	1.000, NS
Hyperthyroidism	2 1.5%	0 0.0%	1.000, NS
PCOS	2 1.5%	0 0.0%	1.000, NS
Seizure disorder	2	0	1.000, NS

Comorbidities	**Group A (%)**	**Group B (%)**	**Fisher's Exact Test P value**
	1.5%	0.0%	
Systemic lupus erythematosus	1 0.8%	0 0.0%	1.000, NS
Thalassemia	1 0.8%	0 0.0%	1.000, NS
Vitiligo	1 0.8%	0 0.0%	1.000, NS
Chronic hypertension	1 0.8%	0 0.0%	1.000, NS

Fisher's Exact test applied. P value <0.05 was taken as statistically significant

VITAL SIGNS IN GROUP A (NORMAL PREGNANCY) AND GROUP B (PRE-ECLAMPSIA)

1. VITAL SIGNS IN NORMAL PREGNANCY:

The mean (± SD) of Heart rate, systolic, diastolic and mean blood pressure at baseline and every 3 minutes thereafter till 21 minutes in patients with normal pregnancy are as shown in Table-7.

Table 7- Vital signs (Mean Heart rate, Systolic, diastolic and mean blood pressure at different time points in patients with normal pregnancy)

Time point	Heart rate	Systolic blood pressure	Diastolic blood pressure	Mean arterial pressure
Baseline	89.11 ± 15.01	117.26 ± 12.2	73.47 ± 10.62	87.78 ± 10.17
3 minutes	92.89 ± 13.87	106.89 ± 14.58	66.92 ± 13.01	79.79 ± 12.97
6 minutes	94.19 ± 12.31	101.74 ± 13.41	61.52 ± 12.89	74.29 ± 12.96
9 minutes	95.65 ± 12.7	102.89 ± 11.7	64.26 ± 11.73	76.86 ± 10.78
12 minutes	94.38 ± 12.41	105.38 ± 9.63	64.83 ± 10.83	78.44 ± 9.72
15 minutes	94.28 ± 11.3	105.94 ± 9.4	64.92 ± 11.22	78.44 ± 10.1
18minutes	94.68 ± 11.31	108.72 ± 9.56	68.7 ± 10.29	81.99 ± 9.25
21minutes	95.06 ± 10.69	109.32 ± 8.57	68.47 ± 8.89	81.84 ± 8

2. VITAL SIGNS IN PREGNANT PATIENTS WITH PRE-ECLAMPSIA:

The mean (± SD) of Heart rate, systolic, diastolic and mean blood pressure at baseline and every 3 minutes thereafter till 21 minutes in patients with pre-eclampsia are as shown in Table 8.

Table 8- Vital signs (Mean Heart rate, Systolic, diastolic and mean blood pressure) at different time points in patients with pre-eclampsia

Time point	Heart rate	Systolic blood pressure	Diastolic blood pressure	Mean arterial pressure
Baseline	90.37 ± 10.66	153.49 ± 19.54	102.23 ± 14.74	119.06 ± 15.42
3 minutes	93.49 ± 12.12	146.63 ± 22.35	97.94 ± 17.83	115.54 ± 16
6 minutes	93.71 ± 9.61	141.11 ± 21.34	98.23 ± 17.66	112.17 ± 18.22
9 minutes	93.14 ± 7.61	142.51 ± 20.35	101.54 ± 17.42	114.89 ± 17.18
12 minutes	93.74 ± 9.32	141.69 ± 18.61	97.77 ± 9.45	112.11 ± 12.01
15 minutes	92.89 ± 9.12	141.89 ± 15.2	95.83 ± 14.18	112.09 ± 12.86
18minutes	96.74 ± 9.03	143.49 ± 15.68	102.91 ± 15.68	116.09 ± 15.12
21minutes	96.4 ± 9.6	143.17 ± 18.19	94.91 ± 13.58	110.83 ± 14.73

3. COMPARISON OF VITAL SIGNS IN PATIENTS WITH NORMAL PREGNANCY PRE-ECLAMPSIA

a. HEART RATE

Table 9 shows the comparison of mean heart rate between the two cohorts at different time points. The mean heart rate between the two groups at all the time points was comparable (P>0.05).

Table 9- Comparison of mean heart rate between the two groups at different time points

Time Point	Group A [Mean±SD]	Group B [Mean±SD]	't' value, df	P value
Baseline	89.11 ± 15.01	90.37 ± 10.66	-0.468, df=166	0.640, NS
At 3 minutes	92.89 ± 13.87	93.49 ± 12.12	-0.23, df=166	0.818, NS
At 6 minutes	94.19 ± 12.31	93.71 ± 9.61	0.211, df=166	0.833, NS
At 9 minutes	95.65 ± 12.7	93.14 ± 7.61	1.117, df=166	0.266, NS
At 12 minutes	94.38 ± 12.41	93.74 ± 9.32	0.285, df=166	0.776, NS
At 15 minutes	94.28 ± 11.3	92.89 ± 9.12	0.673, df=166	0.502, NS
At 18 minutes	94.68 ± 11.31	96.74 ± 9.03	-0.999, df=166	0.319, NS
At 21 minutes	95.06 ± 10.69	96.4 ± 9.6	-0.673, df=166	0.502, NS

Unpaired 't' test applied. P value <0.05 was taken as statistically significant

b. MEAN SYSTOLIC BLOOD PRESSURE

The mean systolic blood pressure was significantly higher in Group B women compared to Group A women at all the time points (P<0.05). (Table 10)

Table 10- Comparison of mean systolic blood pressure between the two groups at different time points

Time Point	Group A [Mean±SD]	Group B [Mean±SD]	't' value, df	P value
Baseline	117.26 ± 12.2	153.49 ± 19.54	-13.603, df=166	0.001*
At 3 minutes	106.89 ± 14.58	146.63 ± 22.35	-12.697, df=166	0.001*
At 6 minutes	101.74 ± 13.41	141.11 ± 21.34	-13.485, df=166	0.001*
At 9 minutes	102.89 ± 11.7	142.51 ± 20.35	-14.987, df=166	0.001*
At 12 minutes	105.38 ± 9.63	141.69 ± 18.61	-15.888, df=166	0.001*
At 15 minutes	105.94 ± 9.4	141.89 ± 15.2	-17.448, df=166	0.001*
At 18 minutes	108.72 ± 9.56	143.49 ± 15.68	-16.503, df=166	0.001*
At 21 minutes	109.32 ± 8.57	143.17 ± 18.19	-15.867, df=166	0.001*

Unpaired 't' test applied. P value <0.05 was taken as statistically significant

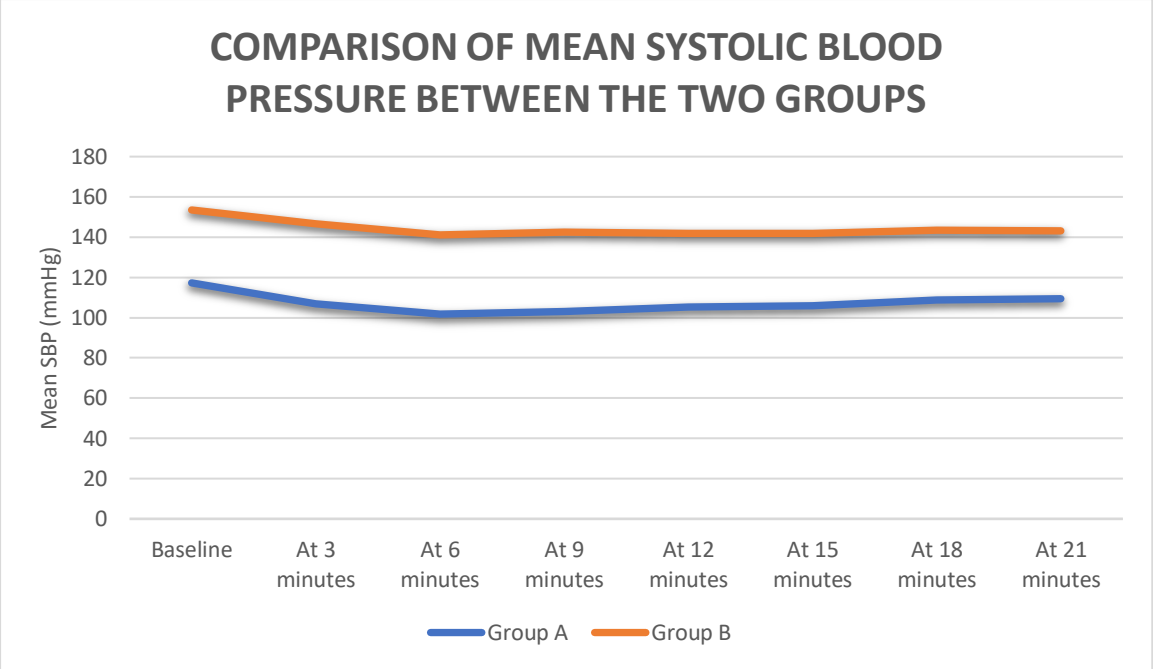

Figure 4: Line diagram shows the comparison of mean systolic blood pressure between the two groups at different time points

c. DIASTOLIC BLOOD PRESSURE

The mean diastolic blood pressure was significantly higher in Group B women compared to Group A women at all the time points ($P<0.05$).(Table 11)

Table 11- Comparison of mean diastolic blood pressure between the two groups

Time Point	Group A [Mean±SD]	Group B [Mean±SD]	't' value, df	P value
Baseline	73.47 ± 10.62	102.23 ± 14.74	-13.07, df=166	0.001*
At 3 minutes	66.92 ± 13.01	97.94 ± 17.83	-11.559, df=166	0.001*
At 6 minutes	61.52 ± 12.89	98.23 ± 17.66	-13.8, df=166	0.001*
At 9 minutes	64.26 ± 11.73	101.54 ± 17.42	-14.988, df=166	0.001*
At 12 minutes	64.83 ± 10.83	97.77 ± 9.45	-16.413, df=166	0.001*
At 15 minutes	64.92 ± 11.22	95.83 ± 14.18	-13.683, df=166	0.001*
At 18 minutes	68.7 ± 10.29	102.91 ± 15.68	-15.526, df=166	0.001*
At 21 minutes	68.47 ± 8.89	94.91 ± 13.58	-13.877, df=166	0.001*

ed 't' test applied. P value <0.05 was taken as statistically significant

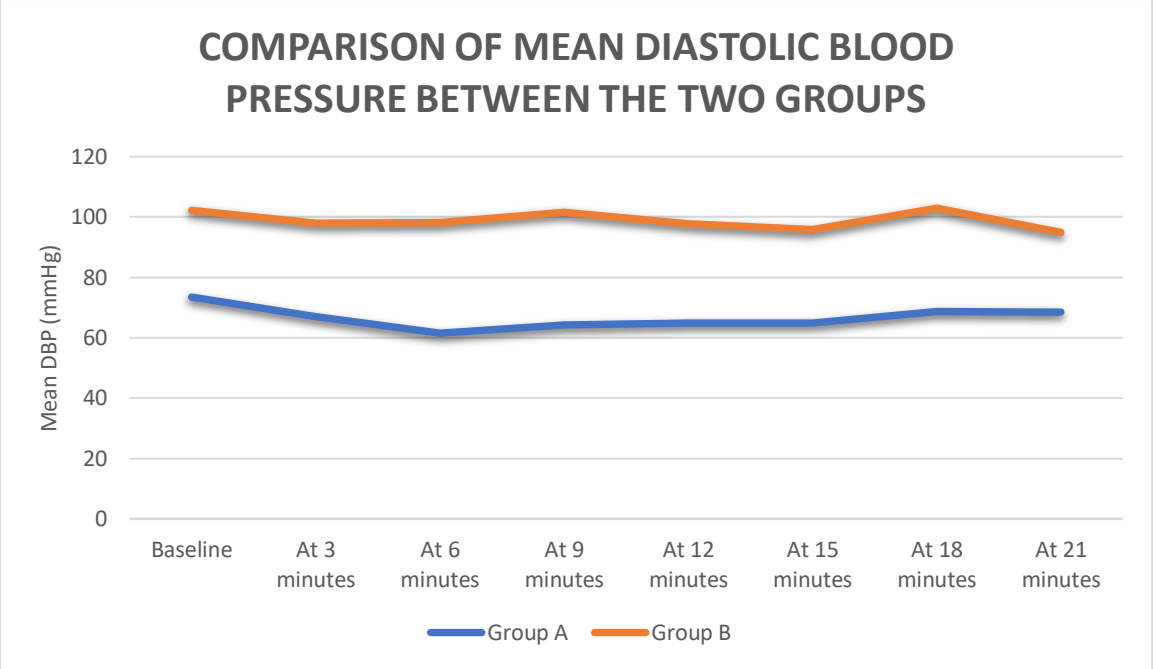

Figure 5: Line diagram shows the comparison of mean diastolic blood pressure between the two groups at different time points

MEAN ARTERIAL PRESSURE

The mean MAP was significantly higher in Group B women compared to Group A women at all the time points (P<0.05).(Table 12)

Table 12- Comparison of mean MAP between the two groups at different time points

Time Point	Group A [Mean±SD]	Group B [Mean±SD]	't' value, df	P value
Baseline	87.78 ± 10.17	119.06 ± 15.42	-14.387, df=166	0.001*
At 3 minutes	79.79 ± 12.97	115.54 ± 16	-13.792, df=166	0.001*
At 6 minutes	74.29 ± 12.96	112.17 ± 18.22	-14.048, df=166	0.001*
At 9 minutes	76.86 ± 10.78	114.89 ± 17.18	-16.193, df=166	0.001*
At 12 minutes	78.44 ± 9.72	112.11 ± 12.01	-17.332, df=166	0.001*
At 15 minutes	78.44 ± 10.1	112.09 ± 12.86	-16.517, df=166	0.001*
At 18 minutes	81.99 ± 9.25	116.09 ± 15.12	-16.741, df=166	0.001*
At 21 minutes	81.84 ± 8	110.83 ± 14.73	-15.625, df=166	0.001*

Unpaired 't' test applied. P value <0.05 was taken as statistically significant

PERFUSION INDEX

NORMAL PREGNANCY:

In Group A (Normal pregnancy) cohort, the baseline perfusion index was 3.72±1.74. Thereafter, an increase in perfusion index was noted with peak at 9 minutes after administration of Subarachnoid block, with a decline thereafter. Even at 21 minutes, the PI value did not reach the baseline. (Table 13)

Table 13- Perfusion Index in patients with normal pregnancy at different time points

Time Point	PERFUSION INDEX [Mean± SD]
Baseline	3.72 ± 1.74
At 3 minutes	4.29 ± 1.8
At 6 minutes	5.17 ± 2.18
At 9 minutes	5.27 ± 2.03
At 12 minutes	4.94 ± 1.49
At 15 minutes	4.88 ± 1.29
At 18 minutes	4.57 ± 1.13
At 21 minutes	4.55 ± 1.26

PRE-ECLAMPSIA:

In the cohort of patients with preeclampsia, the perfusion index value was 3.97 ± 1.94 at baseline, reaching a peak till 6 minutes and thereafter decreasing below baseline levels.(Table 14)

Table 14- Perfusion Index in patients with pre-eclampsia at different time points

Time Point	PERFUSION INDEX [Mean±SD]
Baseline	3.97 ± 1.94
At 3 minutes	3.76 ± 1.18
At 6 minutes	4.03 ± 1.36
At 9 minutes	3.86 ± 0.61
At 12 minutes	3.7 ± 0.69
At 15 minutes	3.76 ± 0.65
At 18 minutes	3.7±0.66
At 21 minutes	3.77±0.65

DOSE AND VOLUME OF BUPIVACAINE USED FOR SPINAL ANESTHESIA

The mean dose of 0.5% Bupivacaine (Heavy) used for subarachnoid block was 2.19+ 0.06 and 2.2+ 0.0 in patients with normal pregnancy and preeclampsia, respectively. (p value 0.373)

INCIDENCE OF POST SPINAL HYPOTENSION

In the 133 women with normal uncomplicated pregnancy (Group A), 52 women developed post spinal hypotension with a total incidence of 39.1%.

In the 35 women with pre-eclampsia (Group B), only 2 women developed post spinal hypotension with an incidence of 5.7%.

Post-spinal hypotension was seen in higher proportion of women in Group A compared to Group B (P value 0.001).

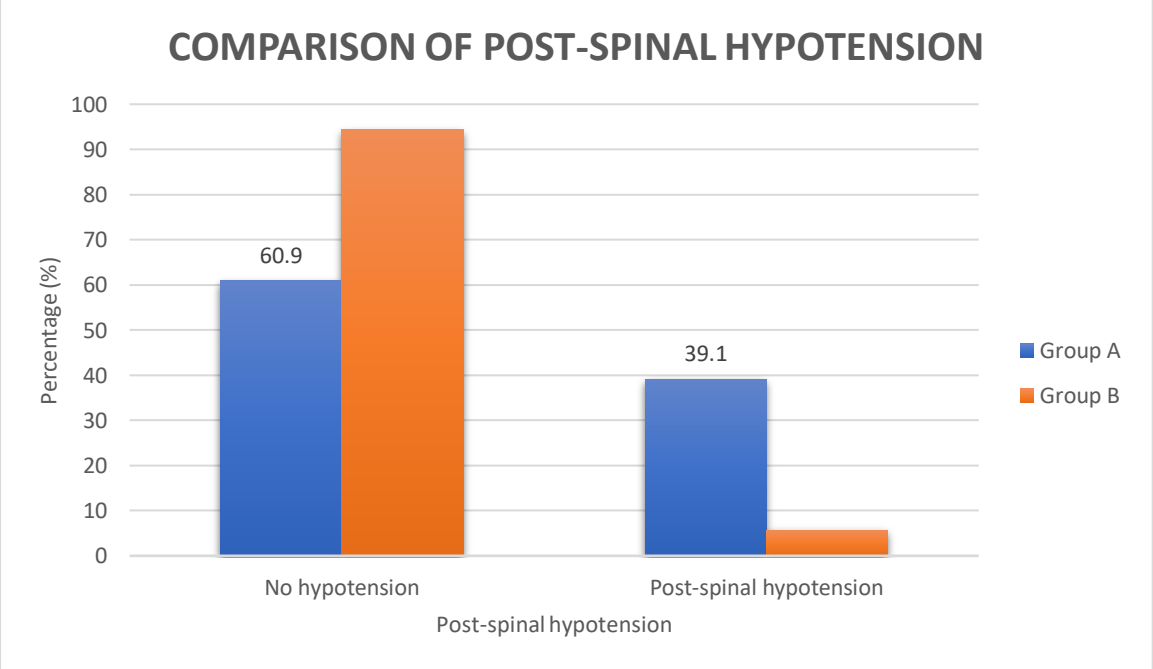

Figure 6- Comparison of incidence of post spinal hypotension and baseline perfusion index values in normal and pre-eclamptic study cohort

CORRELATION OF BASELINE PERFUSION INDEX WITH POST SPINAL HYPOTENSION IN PATIENTS WITH NORMAL PREGNANCY

In women with normal pregnancy, the Receiver Operating Curve of baseline perfusion index was plotted for the prediction of post-spinal hypotension. The positive cases (39.1%) were considered those with post-spinal hypotension (n=52) and negative cases (60.9%) were considered those without post-spinal hypotension (n=81).The area under the curve was observed to be 0.792, which shows that baseline perfusion index is a good predictor of post-spinal hypotension in Group A women.

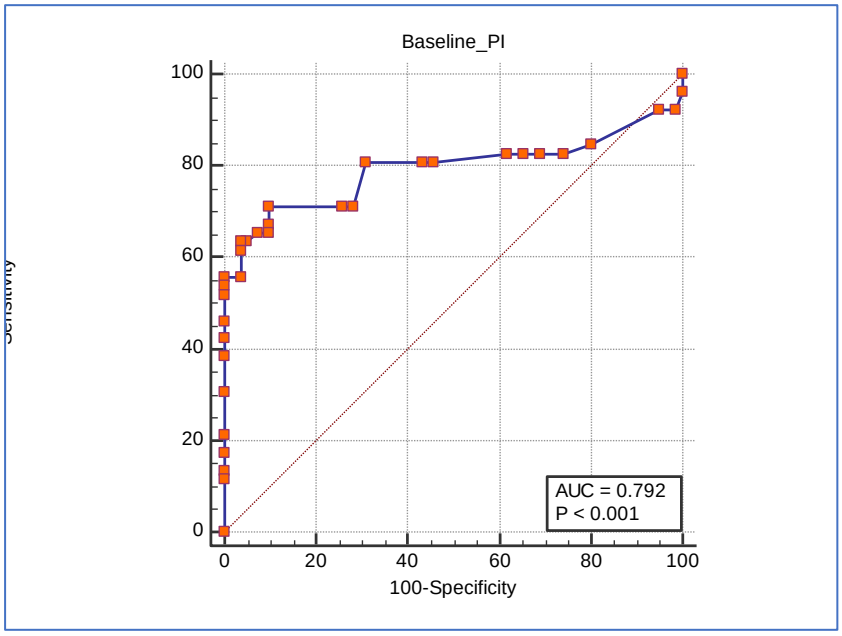

Figure 7: Receiver operating characteristic curve of baseline perfusion index for the prediction of post-spinal hypotension in women with normal pregnancy.

Table 15- Area under the ROC curve (AUC)

Area under the ROC curve (AUC)	0.792
Standard Error	0.0492
95% Confidence interval	0.714 to 0.858
z statistic	5.950
Significance level P (Area=0.5)	<0.0001

Table 16- Youden index

Youden index J	0.6128
Associated criterion	>3.4
Sensitivity	71.15
Specificity	90.12

The baseline perfusion index cut-off value of 3.4 had a sensitivity of 71.15% and specificity of 90.12% in the prediction of post-spinal hypotension. If the baseline perfusion index was more than 3.4, then the chances of patients with normal pregnancy having post-spinal hypotension are very high, and if the baseline perfusion index is <=3.4, then chances of post-spinal hypotension are very less in Group A women.

PRE-ECLAMPSIA

Since only 2 patients developed post spinal hypotension, it was not possible to plot a ROC curve for finding the correlation of baseline perfusion index in parturient with pre-eclampsia and development of post spinal hypotension.

TREND IN PERFUSION INDEX WITH RESPECT TO INTRAVENOUS FLUID ADMINISTRATION

NORMAL PREGNANCY:

There was a positive, weak, statistically significant correlation between perfusion index and intravenous fluid requirement at 3 minutes, at 6 minutes, at 9 minutes, at 12 minutes and at 15 minutes ($P<0.05$), while no significant correlation was seen at 18 minutes and 21 minutes ($P>0.05$).

It means that as the perfusion index kept on increasing, fluid requirement kept on increasing till 15 minutes and then had no significant correlation with perfusion index.(Table 17)

Table 17- Table showing the correlation between Perfusion Index and the Intravenous fluid administration at different time points in patients with normal pregnancy (Group A)

(N=133)

Time Point	Perfusion index	'r' value	P value	Interpretation
3 minutes	3.72± 1.74	0.432	0.001*	Positive, weak, statistically significant correlation between perfusion index and intravenous fluid requirement

6 minutes	4.29± 1.8	0.358	0.001*	Positive, weak, statistically significant correlation between perfusion index and intravenous fluid requirement
9 minutes	5.17± 2.18	0.260	0.003*	Positive, very weak, statistically significant correlation between perfusion index and intravenous fluid requirement
12 minutes	5.27± 2.03	0.189	0.029*	Positive, very weak, statistically significant correlation between perfusion index and intravenous fluid requirement
15 minutes	4.94± 1.49	0.256	0.003*	Positive, very weak, statistically significant correlation between perfusion index and intravenous fluid requirement
18 minutes	4.88± 1.29	0.153	0.079, NS	Positive, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement
21 minutes	4.57± 1.13	0.104	0.232, NS	Positive, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement

Pearson coefficient of correlation test applied. P value <0.05 was taken as statistically significant

<u>PRE- ECLAMPSIA:</u>

There was a positive, weak, statistically significant correlation between perfusion index and intravenous fluid requirement at 18 minutes (P<0.05), while no significant correlation was seen at all the other time points (P>0.05).(Table 18)

Table 18- Correlation between perfusion index and intravenous fluid requirement at each time point in parturient with pre-eclampsia

(N=133)

Time Point	**Perfusion index**	**'r' value**	**P value**	**Interpretation**
3 minutes		0.087	0.621, NS	Positive, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement
6 minutes		-0.223	0.199, NS	Negative, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement
9 minutes		-0.216	0.212, NS	Negative, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement
12 minutes		0.213	0.218, NS	Positive, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement

15 minutes		0.279	0.105, NS	Positive, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement
18 minutes		0.397	0.018*	Positive, weak, statistically significant correlation between perfusion index and intravenous fluid requirement
21 minutes		-0.044	0.802, NS	Positive, very weak, statistically not significant correlation between perfusion index and intravenous fluid requirement

Pearson coefficient of correlation test applied. P value <0.05 was taken as statistically significant

COMPARISION OF INTRAVENOUS CRYSTALLOID ADMINISTRATION IN BOTH THE GROUPS:

The mean intravenous fluid administration was significantly higher in Group A women compared to Group A women at 3 minutes, at 6 minutes, at 9 minutes, at 12 minutes, at 15 minutes, and at 18 minutes ($P<0.05$), while at 21 minutes, the mean intravenous fluid administration was significantly higher in Group B women compared to Group A women ($P<0.05$).

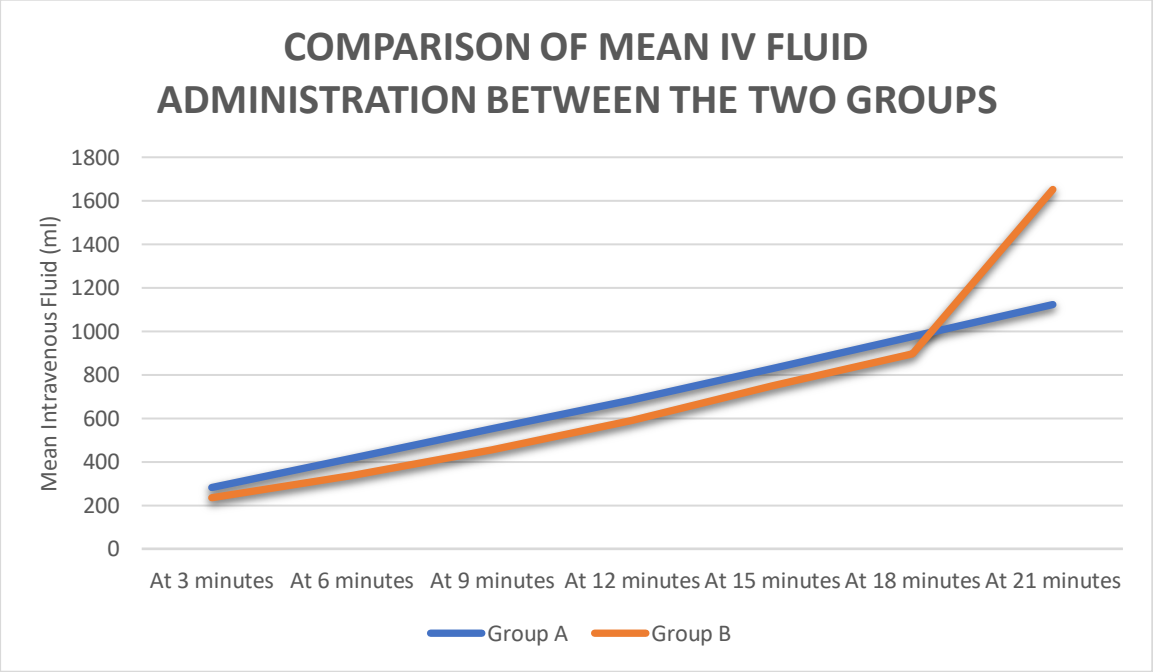

Figure 8- Line diagram shows the comparison of mean intravenous fluid administration between the two groups at different time points

TREND IN PERFUSION INDEX WITH RESPECT TO OXYTOCIN ADMINISTRATION

NORMAL PREGNANCY:

There was a negative, very very weak, statistically not significant correlation between baseline perfusion index and oxytocin requirement (P>0.05) in Group A women.(Table 19)

Table 19- Correlation between baseline perfusion index and dose of oxytocin at each time point in Group A women

(N=133)

Pair	'r' value	P value	Interpretation
Baseline PI and oxytocin requirement	-0.034	0.701, NS	Negative, very very weak, statistically not significant correlation between perfusion index and oxytocin requirement

Pearson coefficient of correlation test applied. P value <0.05 was taken as statistically significant

PRE-ECLAMPSIA:

There was a positive, fair, statistically significant correlation between baseline perfusion index and oxytocin (P<0.05) in Group B women.(Table 20)

Table 20- Correlation between baseline perfusion index and dose of oxytocin at each time point in Group B women

(N=133)

Pair	'r' value	P value	Interpretation
Baseline PI and oxytocin requirement	0.587	0.001*	Positive, fair, statistically significant correlation between perfusion index and oxytocin requirement

Pearson coefficient of correlation test applied. P value <0.05 was taken as statistically significant

CORRELATION OF PERFUSION INDEX WITH RESPECT TO EPHEDRINE ADMINISTRATION

NORMAL PREGNANCY:

There was a positive, strong, statistically significant correlation between perfusion index and ephedrine dose (P<0.05) in Group A women.(Table 21)

Table 21- Correlation between baseline perfusion index and dose of ephedrine at each time point in Group A women

(N=133)

Pair	'r' value	P value	Interpretation
Baseline PI and ephedrine requirement	0.788	0.001*	Positive, strong, statistically significant correlation between perfusion index and ephedrine requirement

Pearson coefficient of correlation test applied. P value <0.05 was taken as statistically significant

PRE-ECLAMPSIA:

There was a positive, weak, statistically not significant correlation between baseline perfusion index and ephedrine dose (P>0.05) in Group B women.(Table 22)

Table 22: Correlation between baseline perfusion index and dose of ephedrine at each time point in Group B women

(N=133)

Pair	'r' value	P value	Interpretation
Baseline PI and ephedrine requirement	0.185	0.288, NS	Positive, weak, statistically not significant correlation between perfusion index and ephedrine requirement

Pearson coefficient of correlation test applied. P value <0.05 was taken as statistically significant

NEONATAL PARAMETERS :

COMPARISION OF NEONATAL WEIGHT IN EITHER GROUPS:

The mean birth weight in Group A was 2.88 ± 0.52 kg and in Group B, it was 2.65 ± 0.56 kg. The difference was found to be statistically significant (P=0.020).

The mean birth weight was significantly higher in Group A neonates compared to Group B neonates.

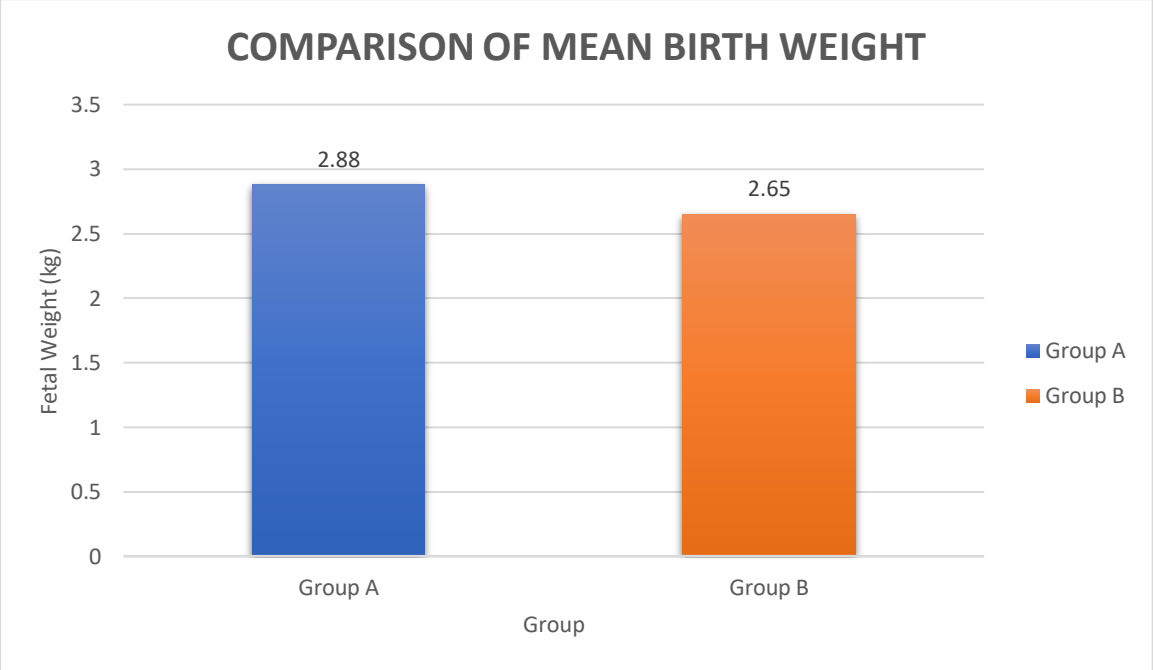

Figure 9- bar diagram ahowing mean birth weights in group A and group B women

CORRELATION BETWEEN BASELINE PERFUSION INDEX AND APGAR SCORE:

IN NORMAL UNCOMPLICATED PREGNANCY:

APGAR AT I MINUTE:

We found that in those women with a baseline perfusion index of < 3.4 none of the babies had APGAR of < 7 and all of these women had babies with APGAR of >=7.

We also found that in those with baseline perfusion index of > 3.4, 7 women (15.6 %) had APGAR of < 7 and 38 women had APGAR of >=7.(Table 23)

Table 23- Table showing relation of perfusion index with APGAR score at 1 minute:

	APGAR < 7	**APGAR>=7**	**TOTAL**
BASELINE PI <3.4	0(0.0%)	123(100%)	123(100 %)
BASELINE PI>= 3.4	7(15.6%)	38(84.4%)	45(100%)
TOTAL	7(4.2 %)	161(95.8 %)	168(100%)

APGAR AT 5 MINUTES:

The same results were also observed at 5 minutes, in those women with a baseline perfusion index of < 3.4 none of the babies had APGAR of < 7 and all of these women had babies with APGAR of >=7.

We also found that in those with baseline perfusion index of > 3.4, 7 women (15.6 %) had APGAR of < 7 and 38 women had APGAR of >=7.(Table 24)

Table 24- Table showing relation of perfusion index with APGAR score at 5 minute:

	APGAR < 7	**APGAR>=7**	**TOTAL**
BASELINE PI <3.4	0(0.0%)	123(100%)	123(100 %)
BASELINE PI >=3.4	7(15.6%)	38(84.4%)	45(100%)
	7(4.2 %)	161(95.8 %)	168\(100%)

IN PRE-ECLAMPSIA:

The same corelation of APGAR with baseline perfusion index could not be established in this study cohort as we couldn't construct the ROC curve to find out baseline perfusion index that corresponded with post spinal hypotension.

DISCUSSION

In this prospective observational cohort study in 133 parturient with normal pregnancy and 35 parturient with pre-eclampsia undergoing lower segment cesarean section under subarachnoid block, we observed that

- In our study cohort of parturient with normal pregnancy, the incidence of Post-spinal hypotension was 39.1%. A baseline Perfusion index of 3.4 was a had an AUC of 0.792, which shows that it is a good predictor of post-spinal hypotension in parturient with normal pregnancy, with a sensitivity of 71.15% and specificity of 90.12% in the prediction of post-spinal hypotension.
- In our study cohort of parturient with pre-eclampsia, the incidence of Post-spinal hypotension was 5.7%. Due to the low percentage of occurrence of PSH, a ROC could not be plotted.
- A weak positive statistically significant correlation was observed between intravenous fluid administration and Perfusion index till 15 minutes in normal pregnancy, while significance was seen at 18 minutes in pre-eclampsia. A positive, strong, statistically significant correlation between perfusion index and ephedrine requirement (p=0.001) was seen in patients with normal pregnancy, but not in pre-eclampsia (p value=0.288). A significant association of perfusion index was seen with oxytocin dose in pre-eclamptic patients, but not in those with normal pregnancy
- The mean birth weight of neonates was significantly higher in parturient with normal pregnancy as compared to preeclampsia. Further, when the perfusion index was more than 3.4, an APGAR score of less than 7 was seen in 7 (15.6%) neonates, which is statistically significant (p value<0.001). When baseline PI was more than 3.4, all neonates had APGAR score more than 7

Even in healthy pregnancy, multiple pathophysiological changes are seen in the vascular system to facilitate uteroplacental perfusion and provide for the fetus. Typically, there is an increase in cardiac output and total blood volume, along with a decrease in in systemic vascular resistance. Further, the peripheral vascular tone is significantly lower at term. (35, 36) Administration of subarachnoid block in such scenario leads to further sympathetic blockade and vasodilation, thereby further exacerbating a decrease in blood pressure.

We observed a higher incidence of Post-spinal hypotension in parturient with normal pregnancy (39.1%) as compared to those with severe pre-eclampsia (5.7%). Aya AGM et al have also reported similar findings with a lower incidence of hypotension in 30 patients with severe pre-eclampsia(16.6%) as compared to 30 patients with normal pregnancy (53.3%). (37) Surprisingly, in their study, women with pre-eclampsia received a smaller intravenous fluid volume and a larger dose of 0.5% bupivacaine, than those with normal pregnancy. In our study cohort, a similar volume and dose of bupivacaine was administered and co- loading was done with similar volume of crystalloids in patients with normal pregnancy as well as pre-eclampsia. The lower birth weight of fetus of pre-eclamptic mothers may be contributory to the lesser aortocaval compression and lesser hypotension. Aya AGM et al postulated that pre-eclampsia is characterized by increased production of various circulating factors with a potent vasoconstrictor effect, which may not be altered wih subarachnoid block, contributing to less hypotension. (37)

Previous studies based on Parturient height, weight and baseline Heart rate could not predict Post-spinal hypotension. (21) There are multiple studies where a decrease in the peripheral vascular tone has been demonstrated in pregnancy using plethysmography. (38, 39) Since Perfusion index is the ratio of pulsatile blood flow to the non-pulsatile blood flow in the peripheral tissue, it may be used as a simple, non-invasive marker to guide regarding the

changes in peripheral tone of the vascular system. (40, 41) It is available in most pulse oximeters. It has been demonstrated in previous studies that increase in perfusion index is a better and more sensitive marker of development of epidural induced sympathetic block, compared with rise in temperature of the skin. (42) We were able to confirm our hypothesis that parturient with high baseline perfusion index have low systemic vascular resistance to begin with and hence they are at a higher risk of developing post spinal hypotension, in our study. Perfusion index may help in prediction of post spinal hypotension beforehand, thereby, facilitating institution of preventive measures. This is particularly important in Cesarean section as maternal post-spinal hypotension puts both the mother and the foetus at risk.

In normal pregnancy, we observed that baseline PI more than 3.4 was a good predictor of post-spinal hypotension, with a sensitivity of 71.15% and specificity of 90.12%. Thus, a perfusion index cut off of less than 3.4 ensures that the patient will not develop Post-spinal hypotension, thereby avoiding administration of unnecessary fluids or vasopressors, which may be detrimental in the course of hospital stay. Similar results were shown in study on Japanese parturients by Toyama et al where a fair correlation was observed between baseline PI and postspinal hypotension. (21)

Jabarulla R et al in a prospective observational study, reported a baseline perfusion index cut off value of 1.75 in prediction of PSH with a sensitivity of 75% and specificity of 71%. (28) Inamanamelluri R et al in their prospective observational study conducted in Odisa observed that when baseline PI was more than 2.85, intraoperative post-spinal hypotension was predicted with a sensitivity of 80%, specificity of 75%, positive predictive value 82.8 and negative predictive value (71.4). (p value-0.001). Hence, they observed that if the PI is more than 2.85, there is 82.8% risk of developing PSH. (6) The predictive Perfusion index value observed in our study is higher than 2.85. Our findings are similar to those reported by Lal J et al and

Duggapa et al reported a value of 3.5 as predictive of PSH in the same cohort. (27, 29) Nandini MG et al observed that a PI value of 3.5 predicted hypotension with a sensitivity of 85.7% and specificity of 60%, while when they used a higher cut off value of 3.9, with increase in specificity to 69%. (30) Previous studies have reported variation in vascular tone in different ethnicities. (43) There are diverse ethnic populations in India, which may also have contributed to the variations in Perfusion index values which are seen in studies done in different parts of India. Further the study by Shah B et al in their study on 60 healthy parturient have not observed any value of a perfusion index value of 3.5 in prediction of PSH during LSCS. (44) However, all of these studies included parturient with normal pregnancy.

There are very limited studies on predictive value of perfusion index in parturient with non-severe pre-eclampsia, Malavika et al observed that baseline perfusion index cut off was higher ie. 4.25, in pre-eclampsia patients, with a sensitivity of 74.5% and specificity of 89.7%, to recognize vulnerability to develop post spinal hypotension. (31) Though we had aimed to study correlation of perfusion index in our study with Postspinal hypotension in patients with pre-eclampsia too, the objective could not be achieved as the incidence of hypotension was too low to plot a ROC curve. One reason contributing to this could be the small sample size of preeclampsia patients recruited in Group B. However, in our study, we had sought to include 25% of patients with preeclampsia (in Group B) as compared to the normal pregnancy population (Group A), due to logistic reasons. Future studies may recruit an equal number of patients with preeclampsia to achieve this objective.

Multiple perioperative variable may be associated with changes in Perfusion index during the surgery. We observed a significant association of fluid with the PI values in both of our study cohorts. The perfusion index was not a target for fluid management in our study. It is possible that more fluid challenge was given when hypotension was present, which explains the

association with higher perfusion index values noted. Hence, the fluid administered was a result of the high PI, rather than contributory to it. We did not note any significant association of perfusion index with oxytocin administration in normal pregnancy. This may be because of the autotransfusion of 300-500 ml blood in the central blood volume when the uterus contracts. (45, 46) However, in pre-eclampsia group, a significant change in PI was observed with oxytocin administration. Previous studies have also shown that the effect of oxytocin on hemodynamics in patients with pre-eclampsia is unpredictable. (47)

Duggapa et al found a highly significant correlation between baseline PI of > 3.4, number of hypotensive episodes, the total dose of ephedrine required and total IV fluids given. (27) **Seeburrun L et al.** also observed an increasing trend in perfusion index with oxytocin administration which correlated with hypotension due to oxytocin. Further, a higher requirement of vasopressors like ephedrine was seen in parturient with baseline PI of >3.5. (47) We also found a strong statistically significant correlation between perfusion index and ephedrine dose in parturients with normal pregnancy, though the same was not seen in pre-eclamptic cohort.

Neither of the studies on correlation of perfusion index with Post spinal Hypotension have evaluated whether it may be used to predict neonatal outcomes in term of APGAR score less than seven at 1 minutes and 5 minutes after birth. Known risk factors for a low APGAR score include preterm birth, post-term birth, low birth weight, congenital malformations and maternal smoking during pregnancy. (48-51) Jeon JY et al observed that the incidence of 1 minute APGAR <7 decreased during phenylephrine use compared with the period of phenylephrine use compared with period of phenylephrine and ephedrine use (p value 0.002). (51) We observed a significantly higher incidence of APGAR at 1minute and 5 minute(15.6%) if baseline perfusion index was more than 3.5 before subarachnoid block in the parturient.

However, future studies may incorporate perfusion index as one of the factors along with other variables like umbilical artery pH values to evaluate predictive models of APGAR<7 at 1 and 5 minutes respectively.

CONCLUSION

We conclude from this study that perfusion index can be used as an effective tool for predicting hypotension after sub-arachnoid block in parturient with normal pregnancy undergoing lower segment caesarean section. Further, the baseline perfusion index of more than 3.4 is a good acceptable predictor of post spinal hypotension in this cohort of patients. We also observed that there is a significantly higher incidence of post spinal hypotension by almost 5 times in patients with normal pregnancy than pre-eclamptic patients. Further, administration of fluids, vasopressors like ephedrine may be guided by perfusion index alongside the clinical assessment. Oxytocin may be associated with a decrease in perfusion index and should be administered cautiously.

The neonatal birth weight was lower in parturient with preeclampsia. Further, neonatal outcomes of APGAR at 1 and 5 minutes less than 7 were associated with a baseline perfusion index value of more than 3.4.

STRENGTH AND LIMITATIONS

STRENGTH

- This is the first study in a tertiary care centre in Central India which is utilizing Perfusion index as an indicator of Post spinal hypotension in parturient with normal pregnancy and those with pre-eclampsia.
- We have studied association of perfusion index with the relevant perioperative variables like intravenous fluids, ephedrine, oxytocin.
- We have compared post-spinal hypotension in patients with normal pregnancy as well as pre-eclampsia.
- The correlation of post-spinal hypotension has also been made with neonatal outcomes, in terms of APGAR score at 1 and 5 minutes, which was not done in previous studies.

LIMITATIONS

- We did not measure hemodynamic parameters like cardiac output and systemic vascular resistance. Since invasive monitoring is not justified in normal uncomplicated pregnancy, it was not feasible to do so. However, multiple studies have earlier found utility of perfusion index in assessment of vascular tone in obstetric population.
- Various factors like stress, anxiety, hypothermia, shivering may influence the perfusion index by altering vascular tone or assessment of plethysmography variables. Though efforts were taken to allay anxiety, prevent hypothermia and shivering, still it cannot be ruled out completely.
- Our study included 35 patients of pre-eclampsia out of which only 2 patients developed post spinal hypotension. Hence, the receiver operating curve could not be constructed to calculate the cut off value of perfusion index in prediction of post-spinal hypotension. This

remains as a drawback in our study. Future studies should include a higher sample size in the pre-eclamptic study cohort so that this disadvantage can be overcome.

- Trend of change in perfusion index with oxytocin administration was not found out as the Perfusion index readings were recorded till 21minutes only and oxytocin was given at a later time in most of the cases.

SUMMARY

This prospective observational cohort study was conducted in the Department of Anaesthesiology and Critical Care, AIIMS Bhopal over a period of 18 months, to find correlation of perfusion index with development of post spinal hypotension in patients with normal uncomplicated pregnancy (n=133) as well as those with preeclampsia (n=35) undergoing lower segment caesarean section.

To summarise, incidence of post-spinal hypotension was compared between the normal pregnancy cohort and those with pre-eclampsia. The correlation of baseline values of Perfusion index was made with post-spinal hypotension in normal pregnancy. The trend of changes in perfusion index with perioperative variable like intravenous fluids, oxytocin dose and ephedrine dose used was studied. Corelation of baseline perfusion index was also studied with foetal outcomes in terms of APGAR at 1 minutes and 5 minutes of less than 7.

In our study cohort of parturient with normal pregnancy, the incidence of Post-spinal hypotension was 39.1%. A baseline Perfusion index of 3.4 has a sensitivity of 71.15% and specificity of 90.12% in the prediction of post-spinal hypotension, with an area under ROC curve of 0.792 which demonstrates good discriminant function. However, the second primary objective could not be achieved as very few parturient with preeclampsia developed hypotension (5.7%).

A statistically significant correlation was observed of perfusion index with both intravenous fluid administration and ephedrine dose in patients with normal pregnancy, but not in pre-eclampsia. A significant association of perfusion index was seen with oxytocin dose in pre-eclamptic patients, but not in those with normal pregnancy

We observed that the mean birth weight of neonates was significantly higher in parturient with normal pregnancy as compared to preeclampsia. Further, when the perfusion index was more

than 3.4, a significantly higher neonates(15.6% versus 0%) had a lower neonatal outcome in terms of an APGAR score of less than 7. (p value<0.001).

Thus we have demonstrated the good discriminant value of Perfusion index in prediction of post-spinal hypotension in normal pregnancy. However, since the incidence of post-spinal hypotension was observed to be less in Pre-eclampsia, the same could not be found.in this cohort. Further, we suggest that baseline perfusion index may have a role in predicting neonatal outcomes.

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PATIENT DATA COLLECTION SHEET:

Serial Number: Patient UHID: Age:

Height: Weight: Gestational

Age:

Indication For LSCS:

Comorbidities:

Antenatal History Gravida: Parity: Living Children: Abortion:

Any other significant History- Preeclampsia:

Baseline parameters:

Time	HR	SBP	DBP	MAP	PI	PVI

HR-heart rate, SBP-systolic blood pressure, DBP-diastolic blood pressure, MAP-mean arterial pressure, PI-perfusion index, PVI- pleth variability index,

Parameters after starting IVF:

Time	HR	SBP	DBP	MAP	PI	PPV	IV fluid (Type/volume)

Time of Oxytocin administration- Dose of Oxytocin-

Spinal- incision time- Spinal to delivery time- Total duration of surgery-

Post-Spinal hypotension present- Yes/No Atropine given- Yes/No. Dose-

Total dose of ephedrine given- Number of times ephedrine was given-

Foetal weight-

APGAR score at 1 minutes 5 minutes

INFORMED CONSENT FORM:

Full Study Title**:** Role of Perfusion Index in prediction of Post- Spinal Hypotension in patients scheduled for caesarean section: A prospective observational cohort study.

	Yes/No
1. I confirm that I have read and understood the information sheet for the study. I confirm that study has been explained to me and I have had ample time and opportunity to ask questions	[ ]
2. I understand that my ward's participation in the study is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights be affected.	[ ]
3. I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s)	[ ]

I confirm that I have fully explained all aspects of the trial to the subject

Signature of the person conducting the Informed Consent;

Dr Bhavana Jagadeesh Signature of the / /

Study Investigator Study Investigator date month year

/ /

Name of the Subject Signature of the person date month year

सूचित सहमति प्रपत्र:

पूर्ण अध्ययन शीर्षक: स्पाइनल बधिरीकरण के बाद होने वाले रक्तचाप की कमी होने में परफ्यूशन इंडेक्स की जाँच की भूमिका

	हां/नहीं
1. मैं पुष्टि करता हूं कि मैंने अध्ययन के लिए सूचना पत्र पाड़ी और सामनी है। मैं पुष्टि करता हूं कि अध्ययन मुझे समझाया गया है और मुझे पर्याप्त समय और सवाल पूछने का अवसर मिला है	[ ]
2. मैं समझता हूं कि अध्ययन में मुझे की भागीदारी स्वैच्छिक है और मैं किसी भी समय अपनी सहमती वापस लेने के लिए स्वतंत्र हूं, बिना कोई कारण बताए, मेरी चिकित्सा देखभाल या कानूनी अधिकारों के बिना प्रभावित हो।	[ ]
3. मैं इस अध्ययन से उत्पन्न होने वाले किसी भी डेटा या परिणामों के उपयोग को प्रतिबंधित नहीं करने के लिए सहमत हूं बशर्ते ऐसा उपयोग केवल वैज्ञानिक उद्देश्य के लिए हो	[ ]

मैं पुष्टि करता हूं कि मुझे इस विषय पर परीक्षण के सभी पहलुओं को पूरी तरह से समझाया है

सूचित सहमति का संचालन करने वाले व्यक्ति के हस्ताक्षर:

/ /

डॉ भावना जगदीश अध्ययन अन्वेषक के हस्ताक्षर दिनांक माह वर्ष
अध्ययन अन्वेषक

/ /

मरीज का नाम व्यक्ति के हस्ताक्षर दिनांक माह वर्ष

PATIENT INFORMATION SHEET:

INTRODUCTION AND PURPOSE INTRODUCTION:

Spinal anaesthesia is a standard method of anaesthesia for elective caesarean section globally. Spinal anaesthesia induced fall in blood pressure remains a common problem, occurring in upto 70% patients. The basic tone of the blood vessels may be low in pregnant patients, which may be associated with more hypotension. Hence it is very important to study whether there is any test which is simple and can predict this fall in blood pressure.

We will use a routine monitoring of Plethysmography which is a standard of care for any surgery under anesthesia. This study is planned to find the baseline perfusion index in pregnant patients coming for cesarean section surgery. Perfusion index monitors the vasomotor tone and may be able to predict hypotension in pregnant patients. Further, we will study the perfusion index values in normal versus preeclamptic obstetric patients, how it varies when intravenous fluid is given and correlation will be made with development of post-spinal hypotension, both in normal pregnancy and patients with preeclampsia

ELIGIBILITY TO PARTICIPATE IN THE STUDY:

All patients undergoing caesarean section who meet our inclusion-exclusion criteria are eligible to participate in our study.

PROCEDURES IN THE STUDY

Patients who agree to be subjects for our study will be examined. In our study we will note relevanthistory, clinical examination (heart rate, respiratory rate, Oxygen saturation, Blood pressure) and perfusion index values as displayed on the plethysmography monitor at predefined time intervals.

POTENTIAL RISKS INVOLVED

There is no potential risk involved in study

POTENTIAL BENEFIT OF PARTICIPATION

By participating in study, subject will be contributing to the evaluation of incidence of post spinal hypotension and its correaltion with PI.

CONFIDENTIALITY

All the information obtained will be maintained confidential. However, the information obtainedwill be used for the purpose of the study without disclosing the identity of the patients.

WHAT WILL HAPPEN IF I DON'T WANT TO CARRY ON WITH THE STUDY?

You are free to withdraw consent from the study without giving reason at any time. This will notaffect the medical care that you receive in any way.

APPROVALS AND CONTACTS:

The study is approved by Ethical review board AIIMS Bhopal. Any query regarding the study can be clarified by contacting Dr. Bhavana Jagadeesh, the primary investigator.

Phone number: 8095066268

Email: sweetbhavana20@gmail.com

In case of any concerns about the conduct of this research study, please contact the AIIMS Human Ethics Committee: Dr. Shashank Purwar, Member Secretary, IHEC, AIIMS Bhopal. Contact no. 07773010099, email id: ihec@aiimsbhopal.edu.in

रोगी सूचना पत्र:

परिचय और उद्देश्य परिचय:

स्पाइनल एनेस्थीसिया निम्न स्तर पर ऐच्छिक सीज़ेरियन सेक्शन के लिए एनेस्थीसिया की एक मानक विधि है।

रक्तचाप में स्पाइनल एनेस्थीसिया प्रेरित गिरावट एक आम समस्या बनी हुई है, जो 70% रोगियों में होती है। रक्त

वाहिकाओं की बुनियादी टोन गर्भवती रोगियों में कम हो सकती है, जो अधिक हाइपोटेंशन से जुड़ी हो सकती है।

इसलिए यह अध्ययन करना बहुत महत्वपूर्ण है कि क्या कोई परीक्षण है जो सरल है और रक्तचाप में इस गिरावट

की भविष्यवाणी कर सकता है।

अध्ययन में प्रक्रियाएं:

जो मरीज हमारे अध्ययन के लिए विषय बनने के लिए सहमत हैं, उनकी जांच की जाएगी । हमारे अध्ययन में हम प्रासंगिक

इतिहास, नैदानिक परीक्षा (हृदय गति, श्वसन दर, ऑक्सीजन संतृप्ति, रक्तचाप) और परामर्शन सूचकांक मूल्यों को ध्यान में रखेंगे

जैसा कि पूर्वनिर्धारित समय अंतराल पर प्लेथिस्मोग्राफी मॉनिटर पर प्रदर्शित किया जाता है।

अध्ययन में कोई संभावित जोखिम शामिल नहीं है

भागीदारी का संभावित लाभ

अध्ययन में भाग लेकर, विषय घटनाओं के मूल्यांकन और पोस्ट स्पाइनल हाइपोटेंशन और पीआई के साथ इसके संबंध में

योगदान देगा।

गोपनीयता:

प्राप्त सभी जानकारी गोपनीय रखी जाएगी। हालांकि, प्राप्त जानकारी का उपयोग रोगियों की पहचान का खुलासा किए बिना

अध्ययन के उद्देश्य के लिए किया जाएगा।

अगर मैं अध्ययन जारी नहीं रखना चाहता तो क्या होगा?

आप किसी भी समय कारण बताए बिना अध्ययन से सहमति वापस लेने के लिए स्वतंत्र हैं। इससे आपको मिलने वाली

चिकित्सा देखभाल पर किसी भी तरह का असर नहीं पड़ेगा।

अनुमोदन और संपर्क:

MASTERCHART:

PATIENT UHID	AGE	HEIGHT	WEIGHT	BMI	GESTATIONAL AGE	INDICATION OF LSCS	COMORBIDIT
2392122002109534	22	152	59	26.2	39+4	NPOL	nil
2392122002109777	28	156	74	30.4	36+6	previous lscs	hypothyroidis
2392122002206788	34	161	67	25.86	38	precious pregnancy	nil
2392122002109564	21	162	58	22.6	38	NPOL	nil
2392122002109995	19	145	54	25.2	41+3	post term	nil
2392122002396755	22	148	48	21.9	39+6	PROM	vitiligo
2392122012018792	28	156	56	23	38	preeclampsia	nil
2329212205464789	30	160	77	30	40+2	patient request	bronchial asth
2392122345690846	21	148	54	24.6	39+6	PROM	SLE
2382123489765005	37	165	98	36	37	elderly primi,obesity	obesity
2392123567890764	26	165	65	23.8	38 +1	primi with PROM	nil
2392122002109534	22	162	59	22.5	39+4	NPOL	nil
2392122002109777	28	166	74	26.9	36+6	previous lscs	hypothyroidis
2392122002206788	34	161	67	25.8	38	precious pregnancy	nil
2392122002109564	21	162	58	22.1	38	NPOL	nil
2392122002109995	19	145	54	25.7	41+3	post term	nil
2392122002396755	22	148	48	21.9	39+6	PROM	nil
2329212205464789	30	160	77	30	40+2	patient request	bronchial asth
2392122345690846	21	148	54	24.6	39+6	PROM	nil
2382123489765005	37	150	98	43.5	37	elderly primi,obesity	obesity
2392123567890764	26	152	65	28	38 +1	primi with PROM	nil
2392123004589079	22	154	54	22.7	39	primi with breech	nil
2392121345908768	28	158	62	24.8	38+3	primi with NPOL	nil
2392122987658997	23	159	68	26.9	36+3	previous LSCS in labour	nil
2392134643890667	31	155	70	29.1	35+5	Primi with precious pregna	IVF
2392134897549578	23	158	70	28.11	41+3	primi with NPOL	nil
2392178599900969	21	154	54	22.7	36+3	breech presentation	nil
2398746666900023	34	158	81	32	36	previous LSCS in labour	GDM
2392156780056783	28	160	58	22.6	36	Previous LSCS,CPD	nil
2392100345678908	39	157	88	35.7	37	previous LSCS	Anemia
2392120000678643	21	149	68	30.6	38	primi with NPOL	nil
2392123003456706	22	156	71	29.2	40	previous LSCS in labour	nil
2392123007856436	28	130	43	25.4	38	short primi with breech	nil
2392123004897508	22	168	66	25.7	37	Primi with MSL	nil
2392123000089768	22	166	56	21.8	39+3	Primi with transverse lie	nil
2392123000005678	28	148	59	26.9	38	previous LSCS in labour	nil
2392123009345874	21	158	66	26.5	28	Primi with PROM	Sickle cell An
2392130008547968	30	160	60	23.4	39+6	failed induction,preecclam	PE
2392123004563221	26	158	62	27.9	37+3	previous LSCS in labour	Hypothyroidis
2392134500789078	21	149	56	25.2	38	primi with NPOL	nil
2392100345876797	22	156	60	26.6	40	previous LSCS in labour	nil
23921765370909876	28	130	49	28.9	38	short primi with breech	nil
2392345000087987	22	168	66	25.7	37	Primi with MSL	nil
2392100032167898	22	166	56	21.8	39+3	Primi with transverse lie	nil
2392108889321998	28	148	59	30	38	previous LSCS in labour	nil
2392134009864568	21	158	56	24.8	28	Primi with PROM	Sickle cell An
2392100002378908	30	160	60	23.4	39+6	failed induction,preecclam	PE
2392123003009876	26	158	62	24.8	37+3	previous LSCS in labour	Hypothyroidis
2392123009876546	23	149	56	25.2	38	primi with NPOL	nil
2392123007865432	34	158	68	27.3	38+6	previous LSCS in labour	Anemia
2392123001234678	22	158	77	30.9	38+3	primi with GDM	GDM
2392123009876578	28	155	60	25	39	NPOL	nil
2392123004500678	25	156	68	27.9	38	Primi with PROM	nil
2392123008907689	32	158	60	24	37	previous LSCS in labour	Hypothyroidis
2302123008978998	37	158	60	26.5	36+3	elderly primi	Chronic hype
2392123007865436	34	158	68	27.3	38+6	previous LSCS in labour	Anemia
2392123007522578	27	160	69	26.9	36+6	primi with PROM	nil
2392123000098743	22	153	64	27.3	39+3	Primi with MSL	nil
23921230000456892	28	152	62	26.8	36+3	previous LSCS in labour	hypothyroidis
2392123005600986	30	148	64	29.2	36	Big baby	GDM
2392123007832157	22	153	68	29	35+2	Primi with PPROM	nil
2392123000045895	31	151	67	30.3	36+3	Primi with chronic hyperter	hypertension
23921230067904532	21	156	64	26.3	39+4	primi with NPOL	nil
2392123000045213	24	160	60	23.4	36	preeclampsia,PROM	nil
2392123000045678	25	151	68	29.8	38+3	primi with breech	nil
2392123000056657	22	149	67	30	39+3	Primi with breech	Thalassemia
2302123009876582	21	151	60	26.3	40+2	Primi with NPOL	nil
2392123000021231	24	156	70	28.8	39+3	Placenta previa	nil
2392123003458907	22	153	64	27.3	39+3	Primi with MSL	nil
2392123006789457	28	162	72	27.4	36+3	previous LSCS in labour	hypothyroidis
2392123009845789	30	148	54	24.6	37	Big baby	GDM
2392123005641333	22	153	68	29	35+2	Primi with PPROM	nil
2392123000045389	31	151	67	29.3	36+3	Primi with chronic hyperter	hypertension
2392123006788901	21	[redacted]				primi with NPOL	nil
2392123000078642	22	155	68	28.3	38+4	previous LSCS in labour	nil

HR 6 minutes	SBP-6 minutes	DBP-6minutes	MAP-6 minutes	PI-6 minutes		IV fliud -6 minute	HR-9 mir
94	98	48	50	7.8		270ml	
110	112	62	81	8.9		680ml	
88	115	75	88	5.5		600ml	
94	98	48	50	7.8		270ml	
118	84	44	57	12		500ml	
96	104	60	75	7.4		200ml	
80	98	60	72	6.5		220ml	
114	104	68	80	5.2		260ml	
68	106	68	80	3.6		400ml	
98	146	98	114	2.8		400ml	
104	90	60	70	4		500ml	
94	98	48	50	7.8		270ml	
110	112	62	81	8.9		680ml	
88	115	75	88	5.5		600ml	
94	98	48	50	7.8		270ml	
118	84	44	57	12		500ml	
96	104	60	75	7.4		200ml	
114	104	68	80	5.2		260ml	
68	106	68	80	3.6		400ml	
98	146	98	114	2.8		400ml	
96	104	60	75	7.4		200ml	
98	94	70	78	6.8		400ml	
88	98	68	78	6.8		350ml	
90	88	65	73	4		350ml	
104	104	78	86	4.8		400ml	
80	84	58	66	6.8		400ml	
100	100	58	72	4.8		380ml	
89	120	87	98	4.5		350ml	
97	90	56	67	5.6		400ml	
118	86	60	68	8.1		800ml	
102	100	70	80	3.3		350ml	
88	94	68	76	4.5		400ml	
90	80	48	58	8.8		500ml	
90	113	77	89	3.3		300ml	
102	100	70	80	3.3		400ml	
78	104	74	84	4.2		350ml	
104	78	39	52	7.1		600ml	
94	140	110	120	3.9		300ml	
77	110	66	80	2.6		280ml	
102	100	70	80	3.3		350ml	
88	94	68	76	4.5		400ml	
90	80	48	58	8.8		500ml	
90	113	77	89	3.3		300ml	
102	100	70	80	3.3		400ml	
78	104	74	84	4.2		350ml	
104	78	39	52	7.1		600ml	
94	140	110	120	3.9		300ml	
77	110	66	80	2.6		280ml	
88	90	45	60	6.8		450ml	
68	102	48	66	3.6		400ml	
102	104	68	80	3		500ml	
110	108	68	81	3.8		450ml	
94	99	44	62	6.8		450ml	
80	110	66	80	2.4		400ml	
80	120	68	85	3.5		450ml	
68	102	48	66	3.6		400ml	
84	100	54	69	4.9		450ml	
80	104	52	69	5.1		400ml	
88	114	56	75	3.1		450ml	
100	109	68	81	4.1		400ml	
102	80	40	53	8.8		550ml	
88	116	70	85	3.1		400ml	
103	112	68	82	3.5		450ml	
108	130	76	94	2.6		450ml	
80	90	48	62	6.8		450ml	
98	102	48	66	6.5		550ml	
88	105	60	75	3.2		400ml	
120	88	39	55	7.8		500ml	
80	104	52	69	5.1		400ml	
88	114	56	75	3.1		450ml	
100	109	68	81	4.1		400ml	
102	80	40	53	8.8		550ml	
88	116	70	85	3.1		400ml	
103	112	68	82	3.5		450ml	
80	102	56	71	3.3		450ml	

IES	ASA GRADE	GRAVIDA	PARITY	LIVING CHILDREN	ABORTION	OTHER SIGNIFICANT HISTORY	BASELINE H
	I	1	0	0	0	0	
ı	II	2	1	1	0	no	
	II	1	0	0	0	no	
	I	1	0	0	0	0	
	I	2	0	0	1	no	
	I	1	0	0	0	no	
	I	3	2	2	0	n0	
na	II	1	0	0	0	nil	1
	II	2	1	1	0	nil	
	II	1	0	0	0	nil	
	I	1	0	0	0	nil	
	I	1	0	0	0	0	
ı	II	2	1	1	0	no	
	I	1	0	0	0	no	
	I	1	0	0	0	0	
	I	2	0	0	1	no	
	I	1	0	0	0	no	
na	II	1	0	0	0	nil	1
	I	2	1	1	0	nil	
	II	1	0	0	0	nil	
	I	1	0	0	0	nil	
	I	1	0	0	0	nil	1
	I	1	0	0	0	nil	
	I	2	1	1	0	nil	
	I	1	0	0	0	nil	1
	I	1	0	0	0	nil	
	I	2	1	1	0	nil	
	II	3	2	2	0	nil	
	I	2	1	1	0	nil	
	II	4	2	1	1	nil	1
	I	1	0	0	0	nil	1
	I	2	1	1	0	nil	
	I	1	0	0	0	nil	
	I	1	0	0	0	nil	
	I	1	0	0	0	nil	1
	I	3	1	1	1	nil	
mia	II	1	0	0	0	nil	1
	I	3	1	1	1	nil	
n	II	2	1	1	0	nil	
	I	1	0	0	0	nil	1
	I	2	1	1	0	nil	
	I	1	0	0	0	nil	
	I	1	0	0	0	nil	
	I	1	0	0	0	nil	1
	I	3	1	1	1	nil	
mia	II	1	0	0	0	nil	1
	II	3	1	1	1	nil	
n	II	2	1	1	0	nil	
	I	1	0	0	0	nil	
	I	2	1	1	0	nil	
	II	1	0	0	0	nil	
	I	3	2	2	0	nil	1
	I	1	0	0	0	nil	
n	II	3	1	1	1	nil	
ens	II	1	0	0	0	nil	
	II	2	1	1	0	nil	
	I	1	0	0	0	nil	
	I	1	0	0	0	nil	
ı	II	3	2	2	0	nil	
	II	2	1	1	0	nil	1
	I	1	0	0	0	nil	1
	II	1	0	0	0	nil	
	I	1	0	0	0	nil	1
	I	3	0	0	2	nil	1
	I	1	0	0	0	nil	
	II	1	0	0	0	nil	1
	I	1	0	0	0	nil	
	I	2	1	1	0	nil	1
	I	1	0	0	0	nil	
ı	II	3	2	2	0	nil	
	II	2	1	1	0	nil	1
	I	1	0	0	0	nil	1
	II	1	0	0	0	nil	
	I	1	[redacted]				1
	I	3	1	1	1	nil	

ate	HR 12 minutes	SBP 12mins	DBP-12 minutes	MAP-12 mins	PI 12 mins		iv fluid-12 mins	HR 15
	89	110	75	87	5.4		650	
	102	115	75	88	7.8		760ml	
	88	118	88	98	2.9		820ml	
	89	110	75	87	5.4		650	
	114	104	74	84	4.8		800ml	
	110	106	76	86	7.4		500ml	
	70	104	80	88	5.6		500ml	
	119	88	58	68	8		400ml	
	70	108	68	81	2.8		500ml	
	74	144	90	108	2.9		700ml	
	96	100	70	80	4.8		800ml	
	89	110	75	87	5.4		650	
	102	115	75	88	7.8		760ml	
	88	118	88	98	2.9		820ml	
	89	110	75	87	5.4		650	
	114	104	74	84	4.8		800ml	
	110	106	76	86	7.4		500ml	
	119	88	58	68	8		400ml	
	70	108	68	81	2.8		500ml	
	74	144	90	108	2.9		700ml	
	110	106	76	86	7.4		500ml	
	100	94	70	78	6.5		750ml	
	88	104	74	84	4.8		550ml	
	100	110	76	87	2.9		500ml	
	108	112	80	90	4.8		600ml	
	94	100	72	81	5.6		600ml	
	96	104	68	80	5.1		600ml	
	90	118	70	86	3.9		660ml	
	98	98	70	79	5.8		500ml	
	114	100	70	80	6.8		850ml	
	100	104	68	80	3.5		600ml	
	88	104	68	80	4.6		500ml	
	90	100	68	78	5.5		700ml	
	90	110	68	82	3.9		600ml	
	109	106	67	87	4.2		700ml	
	77	104	68	80	4.1		450ml	
	102	98	68	78	6.5		800ml	
	94	138	95	109	4.2		500ml	
	80	100	59	72	3.6		600ml	
	100	104	68	80	3.5		600ml	
	88	104	68	80	4.6		500ml	
	90	100	68	78	5.5		700ml	
	90	110	68	82	3.9		600ml	
	109	106	67	87	4.2		700ml	
	77	104	68	80	4.1		450ml	
	102	98	68	78	6.5		800ml	
	94	138	95	109	4.2		500ml	
	80	100	59	72	3.6		600ml	
	89	100	60	73	5.5		750ml	
	60	104	50	68	4.1		750ml	
	98	100	58	72	3.6		880ml	
	100	100	48	65	6.8		880ml	
	103	92	38	56	7.2		700ml	
	90	104	66	78	3.6		880ml	
	90	122	68	86	3.9		700ml	
	60	104	50	68	4.1		750ml	
	88	104	50	68	5.8		700ml	
	90	100	56	70	5.2		780ml	
	88	114	58	76	3.1		650ml	
	102	108	66	80	6.2		700ml	
	104	94	40	58	6.8		800ml	
	86	108	56	73	3.8		700ml	
	100	112	67	82	4.1		750ml	
	100	124	78	93	3.3		780ml	
	90	88	45	59	7.7		900ml	
	94	104	58	73	6.8		800ml	
	84	112	50	70	3.3		700ml	
	114	96	49	64	7.5		800ml	
	90	100	56	70	5.2		780ml	
	88	114	58	76	3.1		650ml	
	102	108	66	80	6.2		700ml	
	104	94	40	58	6.8		800ml	
	86	108	56	73	3.8		700ml	
	100	112	[redacted]				750ml	
	92	114	55	74	3.2		790ml	

/	BASELINE HR	BASELINE SBP	BASELINE DBP	BASELINE MAP	BASELINE PI	BASELINE PVI	HR-3 minutes	SBP-3 r
0	88	114	78	90	2.1		84	
	68	144	80	101	1.1		75	
	78	112	70	84	2.3		82	
0	88	114	78	90	2.1		84	
	99	100	66	77	7.8		104	
	77	112	80	93	2.2		86	
	67	114	70	84	2.1		70	
	104	130	80	96	3.5		108	
	68	104	70	81	4		66	
	88	156	98	117	1.9		90	
	88	106	78	87	3.8		98	
0	88	114	78	90	2.1		84	
	68	144	80	101	1.1		75	
	78	112	70	84	2.3		82	
0	88	114	78	90	2.1		84	
	99	100	66	77	7.8		104	
	77	112	80	93	1.8		86	
	104	130	80	96	3.5		108	
	68	104	70	81	4		66	
	88	156	98	117	1.9		90	
	77	112	80	93	1.8		86	
	112	124	78	93	3.4		114	
	78	100	74	82	4.2		90	
	89	108	77	84	2.8		94	
	100	104	68	80	3.3		98	
	78	110	80	90	4.8		87	
	90	110	68	82	3.1		104	
	88	130	90	103	4.1		92	
	89	114	68	83	2.9		94	
	124	100	72	81	6.8		130	
	102	110	68	82	2.8		110	
	78	110	70	83	3.4		80	
	76	112	75	87	6.5		88	
	88	134	77	96	2.1		94	
	108	110	80	90	3.4		102	
	68	117	89	98	3.2		77	
	105	98	50	66	6.6		106	
	87	150	110	123	3.3		90	
	66	120	76	90	2.1		70	
	102	110	68	82	2.8		110	
	78	110	70	83	3.4		80	
	76	112	75	87	6.5		88	
	88	134	77	96	2.1		94	
	108	110	80	90	3.4		102	
	68	117	89	98	3.2		77	
	105	98	50	66	6.6		106	
	87	150	110	123	3.3		90	
	66	120	76	90	2.1		70	
	78	104	56	72	6.7		90	
	58	110	60	76	2.8		66	
	99	114	68	83	2.5		104	
	104	122	77	92	2.8		102	
	80	104	55	71	6.3		98	
	78	130	88	102	2.3		88	
	88	130	78	95	3.2		90	
	58	110	60	76	2.8		66	
	88	104	70	81	3.2		84	
	69	130	80	96	5.6		80	
	94	124	78	93	2.1		93	
	100	130	90	103	3.1		104	
	102	122	68	86	7.8		94	
	80	120	80	93	2.4		82	
	100	104	55	71	3.1		100	
	102	140	90	106	2.2		108	
	77	114	58	76	6.2		77	
	102	114	80	91	3.1		100	
	78	114	68	83	2.1		85	
	113	114	68	83	6.5		120	
	69	130	80	96	5.6		80	
	94	124	78	93	2.1		93	
	100	130	90	103	3.1		104	
	102	122	68	86	7.8		94	
	80	120	80	93	2.4		82	
	100	104	[redacted]				100	
	80	102	56	71	2.8		88	

	SBP-3 minutes	DBP-3 minutes	MAP-3 mins	PI-3 minutes		IV fliud -3 minute	HR 6 minutes	SBP-6
94	112	74	88	2.3		100ml	94	
75	146	88	107	1.8		120	110	
92	114	74	87	4.6		300ml	88	
94	112	74	88	2.3		100ml	94	
04	98	60	73	8.8		300ml	118	
96	110	72	85	2.2		150ml	96	
70	104	66	78	3.6		150ml	80	
08	124	80	94	4.8		180ml	114	
96	102	72	85	3.8		220ml	68	
90	148	100	116	2.2		180ml	98	
98	98	66	76	4.2		300ml	104	
94	112	74	88	2.3		100ml	94	
75	146	88	107	1.8		120	110	
92	114	74	87	4.6		300ml	88	
94	112	74	88	2.3		100ml	94	
04	98	60	73	8.8		300ml	118	
96	110	72	85	2.2		150ml	96	
08	124	80	94	4.8		180ml	114	
96	102	72	85	3.8		220ml	68	
90	148	100	116	2.2		180ml	98	
96	110	72	85	2.2		150ml	96	
14	114	84	94	4.8		250ml	98	
90	94	68	76	5.6		200ml	88	
94	104	80	88	3.8		200ml	90	
98	100	78	85	4.5		350ml	104	
87	90	60	70	5.8		220ml	80	
04	98	58	68	4.4		250ml	100	
92	128	88	101	5.1		300ml	89	
94	110	78	88	2.9		300ml	97	
80	78	57	64	7.8		500ml	118	
10	98	66	76	3.1		300ml	102	
80	100	68	78	3.6		260ml	88	
88	90	67	74	7.2		320ml	90	
94	123	88	94	3.1		200ml	90	
02	100	68	78	3.8		300ml	102	
77	100	60	73	3.3		300ml	78	
06	80	40	53	5.8		400ml	104	
90	148	100	116	3.8		200ml	94	
70	115	75	88	2.6		200ml	77	
10	98	66	76	3.1		300ml	102	
80	100	68	78	3.6		260ml	88	
88	90	67	74	7.2		320ml	90	
94	123	88	94	3.1		200ml	90	
02	100	68	78	3.8		300ml	102	
77	100	60	73	3.3		300ml	78	
06	80	40	53	5.8		400ml	104	
90	148	100	116	3.8		200ml	94	
70	115	75	88	2.6		200ml	77	
90	88	40	56	7.1		250ml	88	
96	108	58	74	3.5		280ml	68	
04	104	70	81	2.8		330ml	102	
02	118	79	92	3		300ml	110	
98	80	38	52	7.8		400ml	94	
88	114	76	88	2.4		350ml	80	
90	124	70	88	3.3		340ml	80	
96	108	58	74	3.5		280ml	68	
94	96	49	64	4.6		300ml	84	
80	112	68	82	6.8		350ml	80	
93	118	67	84	3.1		300ml	88	
04	124	68	88	3.7		280ml	100	
94	94	48	60	8.1		350ml	102	
92	114	68	83	2.9		350ml	88	
00	98	48	64	3.3		350ml	103	
08	138	100	112	2.4		330ml	108	
77	102	48	66	5.6		300ml	80	
00	102	58	72	4.1		300ml	98	
85	104	70	81	2.8		280ml	88	
20	102	56	71	5.6		300ml	120	
80	112	68	82	6.8		350ml	80	
93	118	67	84	3.1		300ml	88	
04	124	68	88	3.7		280ml	100	
94	94	48	60	8.1		350ml	102	
92	114	68	83	2.9		350ml	88	
00	98	48	[redacted]			350ml	103	
08	104	56	72	3.1		400ml	80	

IV fliud -6 minute	HR-9 minutes	SBP-9 minutes	DBP-9 minutes	MAP-9 minutes	PI -9 minutes		iv fluid -9
270ml	102	104	78	87	11		500ml
680ml	112	114	64	83	9.2		690ml
600ml	90	116	86	96	3.8		700ml
270ml	102	104	78	87	11		500ml
500ml	116	88	68	75	9.8		650ml
200ml	108	104	64	77	7		300ml
220ml	88	96	60	72	6.8		300ml
260ml	118	90	60	70	7.1		320ml
400ml	68	104	68	70	3.2		450ml
400ml	72	146	98	114	2.9		500ml
500ml	100	98	68	78	5.3		650ml
270ml	102	104	78	87	11		500ml
680ml	112	114	64	83	9.2		690ml
600ml	90	116	86	96	3.8		700ml
270ml	102	104	78	87	11		500ml
500ml	116	88	68	75	9.8		650ml
200ml	108	104	64	77	7		300ml
260ml	118	90	60	70	7.1		320ml
400ml	68	104	68	70	3.2		450ml
400ml	72	146	98	114	2.9		500ml
200ml	108	104	64	77	7		300ml
400ml	99	88	58	68	7.8		650ml
350ml	87	100	68	79	5.8		450ml
350ml	94	94	70	78	3.3		400ml
400ml	102	112	80	90	5.2		450ml
400ml	102	90	60	70	4.8		500ml
380ml	100	100	70	80	5		500ml
350ml	90	118	70	86	4.1		500ml
400ml	100	92	68	76	6		450ml
800ml	114	94	65	75	7.8		820ml
350ml	108	100	70	80	3.8		450ml
400ml	89	104	78	86	4.8		450ml
500ml	94	94	60	73	5.6		600ml
300ml	90	108	68	81	3.7		450ml
400ml	109	108	68	81	3.7		550ml
350ml	78	106	78	87	3.8		400ml
600ml	102	92	64	73	6.8		700ml
300ml	90	140	116	124	3.3		400ml
280ml	75	106	58	74	3.1		400ml
350ml	108	100	70	80	3.8		450ml
400ml	89	104	78	86	4.8		450ml
500ml	94	94	60	73	5.6		600ml
300ml	90	108	68	81	3.7		450ml
400ml	109	108	68	81	3.7		550ml
350ml	78	106	78	87	3.8		400ml
600ml	102	92	64	73	6.8		700ml
300ml	90	140	116	124	3.3		400ml
280ml	75	106	58	74	3.1		400ml
450ml	90	92	40	57	5.6		600ml
400ml	67	104	49	67	4		600ml
500ml	100	98	56	70	3.8		700ml
450ml	108	104	77	86	4.9		600ml
450ml	100	100	68	78	6.4		600ml
400ml	95	104	68	80	2.9		780ml
450ml	90	120	68	85	3.8		500ml
400ml	67	104	49	67	4		600ml
450ml	88	100	48	65	5.5		600ml
400ml	88	94	48	63	6.8		550ml
450ml	90	112	68	82	3.3		500ml
400ml	104	114	56	75	5.1		550ml
550ml	102	90	48	62	7.1		700ml
400ml	86	114	68	83	3.4		550ml
450ml	102	112	58	76	4.1		600ml
450ml	108	128	78	94	3.1		600ml
450ml	81	78	34	48	7.1		800ml
550ml	90	102	60	74	7.4		700ml
400ml	80	110	58	75	3.8		550ml
500ml	112	92	43	59	8.1		700ml
400ml	88	94	48	63	6.8		550ml
450ml	90	112	68	82	3.3		500ml
400ml	104	114	56	75	5.1		550ml
550ml	102	90	48	62	7.1		700ml
400ml	86	114	68	83	3.4		550ml
450ml	102	[redacted]			4.1		600ml
450ml	88	112	68	82	2.1		600ml

HR 15 mins	SBP-15 mins	DBP-15 mins	MAP-15 mins	PI-15 mins		iv fluid 15 mins	HR-18	SBP
79	108	68	81	4.1		800	80	
108	118	68	87	5.6		1000ml	104	
80	112	82	92	2.8		900ml	84	
79	108	68	81	4.1		800	80	
111	108	68	81	3.5		850 ml	108	
108	108	68	81	6.2		700ml	110	
72	100	60	73	4.8		750ml	77	
112	98	68	78	6		600ml	104	
72	107	70	82	2.8		650ml	68	
78	146	104	118	3.2		600ml	74	
104	104	74	84	3.8		880ml	98	
79	108	68	81	4.1		800	80	
108	118	68	87	5.6		1000ml	104	
80	112	82	92	2.8		900ml	84	
79	108	68	81	4.1		800	80	
111	108	68	81	3.5		850 ml	108	
108	108	68	81	6.2		700ml	110	
112	98	68	78	6		600ml	104	
72	107	70	82	2.8		650ml	68	
78	146	104	118	3.2		600ml	74	
108	108	68	81	6.2		700ml	110	
104	98	68	78	5.2		800ml	108	
88	112	77	88	4.7		650ml	90	
98	104	68	80	3.2		600ml	95	
104	108	70	82	4.5		700ml	102	
96	104	78	86	5.1		800ml	90	
102	108	78	88	5.8		900ml	102	
90	110	75	86	3.8		780ml	90	
100	98	70	79	5.5		680ml	98	
115	100	62	74	5.5		900ml	110	
100	104	68	80	3.8		780ml	102	
88	108	88	98	4.8		700ml	80	
90	100	66	77	6.5		800ml	98	
92	108	76	86	4.1		700ml	90	
100	104	58	73	4.8		850ml	104	
88	92	48	62	6.8		700ml	96	
102	96	58	70	5.8		900ml	100	
90	140	98	112	3.8		700ml	104	
78	98	50	66	4.4		800ml	80	
100	104	68	80	3.8		780ml	102	
88	108	88	98	4.8		700ml	80	
90	100	66	77	6.5		800ml	98	
92	108	76	86	4.1		700ml	90	
100	104	58	73	4.8		850ml	104	
88	92	48	62	6.8		700ml	96	
102	96	58	70	5.8		900ml	100	
90	140	98	112	3.8		700ml	104	
78	98	50	66	4.4		800ml	80	
90	102	58	72	6.1		800ml	88	
66	106	56	73	4.7		880ml	68	
90	100	56	70	3.8		1000ml	102	
100	100	60	73	6		1000ml	103	
102	100	60	73	6.8		880ml	102	
90	110	68	82	4.1		920ml	92	
90	120	68	85	4.1		860ml	94	
66	106	56	73	4.7		880ml	68	
86	104	54	70	4.6		850ml	88	
88	100	60	73	4.3		900ml	87	
90	108	60	76	3.2		740ml	88	
104	112	65	80	5.2		900ml	90	
102	100	48	65	6.1		1000ml	104	
88	106	50	68	3.3		850ml	90	
104	112	68	82	4.4		850ml	112	
102	128	68	88	3.7		900ml	102	
90	94	48	63	7.8		1000ml	100	
100	102	64	76	7.1		1000ml	102	
88	114	56	75	2.8		800ml	88	
112	102	60	74	6.8		1000ml	112	
88	100	60	73	4.3		900ml	87	
90	108	60	76	3.2		740ml	88	
104	112	65	80	5.2		900ml	90	
102	100	48	65	6.1		1000ml	104	
88	106	50	68	3.3		850ml	90	
104	112	68	82	4.4		850ml	112	
90	112	58	76	3.3		900ml	80	

SBP-18	DBP-18	MAP-18	PI 18		IV FLUID 18	HR-21	SBP-21	DBP-21
122	88	99	4.5		1000ml	86	118	
128	78	97	3.4		1400ml	102	116	
114	84	94	2.2		1100ml	88	112	
122	88	99	4.5		1000ml	86	118	
106	66	79	3.2		1150ml	112	108	
110	70	84	5.7		800ml	112	114	
114	74	87	4		1000ml	76	112	
100	70	80	4.8		600ml	104	104	
108	78	88	3		720ml	76	106	
138	90	106	3.2		680ml	78	138	
108	78	88	3.2		900ml	100	100	
122	88	99	4.5		1000ml	86	118	
128	78	97	3.4		1400ml	102	116	
114	84	94	2.2		1100ml	88	112	
122	88	99	4.5		1000ml	86	118	
106	66	79	3.2		1150ml	112	108	
110	70	84	5.7		800ml	112	114	
100	70	80	4.8		600ml	104	104	
108	78	88	3		720ml	76	106	
138	90	106	3.2		680ml	78	138	
110	70	84	5.7		800ml	112	114	
110	88	95	4.8		1000ml	98	110	
110	84	92	4.2		880ml	80	112	
100	68	78	2.9		700ml	98	100	
104	68	80	3.8		800ml	100	110	
104	78	86	5.3		900ml	96	110	
110	88	95	4.8		1000ml	100	108	
110	68	82	3.9		850ml	98	110	
102	76	84	4.8		760ml	99	100	
108	68	81	5.1		950ml	104	108	
110	67	81	4.1		800ml	98	104	
110	66	84	4.3		780ml	89	116	
104	68	80	6.3		800ml	88	108	
111	66	81	4.4		750ml	99	110	
110	78	88	4.5		900ml	108	120	
90	54	66	5.5		860ml	89	96	
97	58	71	5.2		1100ml	104	98	
138	110	119	3.4		890ml	100	138	
100	64	76	3.8		900ml	89	102	
110	67	81	4.1		800ml	98	104	
110	66	84	4.3		780ml	89	116	
104	68	80	6.3		800ml	88	108	
111	66	81	4.4		750ml	99	110	
110	78	88	4.5		900ml	108	120	
90	54	66	5.5		860ml	89	96	
97	58	71	5.2		1100ml	104	98	
138	110	119	3.4		890ml	100	138	
100	64	76	3.8		900ml	89	102	
102	58	72	5.8		950ml	90	100	
108	60	78	5.2		950ml	65	105	
100	58	72	3.8		1200ml	100	106	
109	56	73	5.8		1300ml	102	100	
100	56	70	6.1		1000ml	104	104	
112	56	74	4.4		1100ml	99	108	
123	68	86	4.4		920ml	90	122	
108	60	78	5.2		950ml	65	105	
106	70	82	5.1		950ml	80	100	
106	64	78	4.5		1000ml	80	102	
114	60	78	3.8		900ml	87	108	
108	66	80	4.5		1000ml	104	110	
102	66	78	5.5		1200ml	100	104	
108	64	78	2.8		1000ml	88	110	
108	56	73	4.1		1000ml	108	114	
138	98	111	3.8		1200ml	100	126	
100	60	73	6.6		1200ml	90	102	
104	60	74	6.8		1300ml	104	114	
108	60	76	3.1		1000ml	86	102	
112	56	74	8.2		1100ml	102	112	
106	64	78	4.5		1000ml	80	102	
114	60	78	3.8		900ml	87	108	
108	66	80	4.5		1000ml	104	110	
102	66	78	5.5		1200ml	100	104	
108	64	78	2.8		1000ml	88	110	
108	56	73	4.1		1000ml	108	114	
116	68	84	3.3		1100ml	90	108	

DBP-21	MAP-21	PI-21		IV FLIUD -21	Volume of 0.5% I	Time of oxytocin	Dose of
78	91	5.4		1100ml	2.2	18mins	20 IU
86	96	4.5		1400ml	2.2	23mins	20 IU
82	92	2.2		1600ml	2.2	17mins	20 IU
78	91	5.4		1100ml	2.2	17mins	20 IU
78	88	3		1400ml	2.2	17mins	20 iu
74	86	6.2		950ml	2.2	19mins	20 IU
80	91	3.8		1200ml	2.2	18mins	30 IU
78	86	3.2		900ml	2.2	21mins	20IU
68	80	2.9		800ml	2.2	17mins	20 IU
90	106	2.1		700ml	2.2	22mins	20 IU
70	80	3.1		1000ml	2.2	19mins	20 IU
78	91	5.4		1100ml	2.2	18mins	20 IU
86	96	4.5		1400ml	2.2	23mins	20 IU
82	92	2.2		1600ml	2.2	17mins	20 IU
78	91	5.4		1100ml	2.2	17mins	20 IU
78	88	3		1400ml	2.2	17mins	20 iu
74	86	6.2		950ml	2.2	19mins	20 IU
78	86	3.2		900ml	2.2	21mins	20IU
68	80	2.9		800ml	2.2	17mins	20 IU
90	106	2.1		700ml	2.2	22mins	20 IU
74	86	6.2		950ml	2.2	19mins	20 IU
80	90	5.4		1100ml	2.2	23mins	20IU
72	85	3.8		1000ml	2.2	17mins	30 IU
68	78	3.1		880ml	2.2	24mins	20 IU
80	90	3.5		900ml	2.2	27mins	20 IU
70	83	4.1		1000ml	2.2	36mins	20 IU
68	81	4.9		1100ml	2.2	27mins	20IU
78	88	4.1		920ml	2.2	23mins	20 IU
77	84	4.5		800ml	2.2	28mins	20IU
78	88	4.9		1000ml	2.2	24mins	20IU
68	80	4.8		850ml	2.2	17mins	20IU
66	82	5.2		850ml	2.2	24mins	30IU
60	76	5.8		900ml	1.8	25mins	20IU
78	88	3.8		1000ml	2.2	33mins	20IU
70	88	3.6		1100ml	2.2	31mins	20IU
60	72	4.8		1000ml	2.2	27mins	20IU
58	71	6.5		1300ml	2.2	33mins	20IU
90	106	3.5		1000ml	2.2	31mins	40IU
57	72	3.9		1100ml	2.2	26mins	30AM
68	80	4.8		850ml	2.2	17mins	20IU
66	82	5.2		850ml	2.2	24mins	30IU
60	76	5.8		900ml	1.8	25mins	20IU
78	88	3.8		1000ml	2.2	33mins	20IU
70	88	3.6		1100ml	2.2	31mins	20IU
60	72	4.8		1000ml	2.2	27mins	20IU
58	71	6.5		1300ml	2.2	33mins	20IU
90	106	3.5		1000ml	2.2	31mins	40IU
57	72	3.9		1100ml	2.2	26mins	30IU
58	72	5.5		1100ml	2.2	31mins	20IU
70	81	4.4		1020ml	2.2	27mins	20IU
58	74	3.9		1300ml	2.2	29mins	20IU
66	77	4.5		1400ml	2.2	32mins	20IU
60	74	6.6		1100ml	2.2	27mins	20IU
68	81	5.1		1250ml	2.2	21mins	20IU
68	86	4.9		1020ml	2.2	35mins	20IU
70	81	4.4		1020ml	2.2	27mins	20IU
54	69	4.2		1000ml	2.2	31mins	20IU
62	74	3.9		1200ml	2.2	34mins	20IU
60	76	3.1		1200ml	2.2	38mins	20IU
68	82	3.9		1200ml	2.2	35mins	20IU
65	78	5.3		1300ml	2.2	32mins	20IU
68	82	2.9		1200ml	2.2	19mins	20IU
67	82	3.3		1300ml	2.2	23mins	20IU
88	100	3.2		1300ml	2.2	25mins	20IU
58	72	5.8		1300ml	2.2	31mins	20IU
60	78	7		1400ml	2.2	28mins	20IU
50	68	3.2		1200ml	2.2	29mins	20IU
58	76	6.5		1300ml	2.2	31mins	20IU
62	74	3.9		1200ml	2.2	34mins	20IU
60	76	3.1		1200ml	2.2	38mins	20IU
68	82	3.9		1200ml	2.2	35mins	20IU
65	78	5.3		1300ml	2.2	32mins	20IU
68	82	2.9		1200ml	2.2	19mins	20IU
67	82	3.3		1300ml	2.2	23mins	20IU
67	80	3.6		1200ml	2.2	35mins	20IU

2.2	38mins	20IU	17mins	37mins	1:43mins	no
2.2	35mins	20IU	14mins	34mins	1:14mins	no
2.2	32mins	20IU	13mins	31mins	1:12mins	yes
2.2	19mins	20IU	9mins	18mins	48mins	no
2.2	23mins	20IU	11mins	22mins	1:10mins	no
2.2	35mins	20IU	14mins	34mins	1:22mins	no
2.2	29mins	20IU	13mins	28mins	1:16mins	no
2.2	31mins	20IU	14mins	30mins	1:14mins	yes
2.2	33mins	20IU	12mins	32mins	1:29mins	no
2.2	34mins	20IU	13mins	33mins	1:33mins	no
2.2	34mins	20IU	14mins	33mins	1:35mins	yes
2.2	31mins	20IU	13mins	30mins	1:33mins	yes
2.2	34mins	20IU	12mins	33mins	1:37mins	no
2.2	31mins	20IU	14mins	30mins	1:30mins	yes
2.2	27mins	20IU	11 mins	26mins	1:12mins	no
2.2	31mins	20IU	16mins	30mins	1:32mins	no
2.2	27mins	20IU	13mins	26mins	1:23mins	yes
2.2	33mins	20IU	12mins	32mins	1:05mins	yes
2.2	31mins	40IU	15mins	30mins	1:18mins	no
2.2	26mins	30IU	11mins	25mins	1:04mins	no
2.2	31mins	20IU	14mins	30mins	1:14mins	yes
2.2	27mins	20IU	9mins	26mins	56mins	no
2.2	29mins	20IU	12 mins	28mins	1:33mins	no
2.2	32mins	20IU	12mins	31mins	1:21 mins	no
2.2	27mins	20IU	10mins	26mins	1:12mins	yes
2.2	21mins	20IU	11mins	20mins	49mins	no
2.2	36mins	20 IU	17 Mins	35 mins	1:42mins	yes
2.2	27mins	20IU	10mins	26 mins	1:16 mins	no
2.2	23mins	20 IU	9 MINS	22MINS	1:04 mins	no
2.2	28mins	20IU	13minds	27mins	1:33mins	no
2.2	24mins	20IU	14mins	23mins	1:08mins	yes
2.2	17mins	20IU	9 mins	16mins	54 mins	no
2.2	24mins	30IU	12mins	23mins	1:09mins	no
1.8	25mins	20IU	13mins	24mins	1:12mins	yes
2.2	33mins	20IU	14mins	32 mins	1:45 mins	no
2.2	31mins	20IU	16mins	30mins	1:32mins	no
2.2	27mins	20IU	13mins	26mins	1:23mins	yes
2.2	33mins	20IU	12mins	32mins	1:05mins	yes
2.2	31mins	40IU	15mins	30mins	1:18mins	no
2.2	26mins	20IU	11mins	25mins	1:04mins	no
2.2	21mins	20IU	11mins	20mins	1:07mins	no
2.2	27mins	20IU	11 mins	26mins	1:12mins	no
2.2	31mins	20IU	16mins	30mins	1:32mins	no
2.2	33mins	20IU	12mins	32mins	1:29mins	no
2.2	27mins	20IU	9mins	26mins	56mins	no
2.2	26mins	30AM	11mins	25mins	1:04mins	no
2.2	17mins	20 iu	8 mins	16 mins	58 mins	yes
2.2	32mins	20IU	13mins	31mins	1:12mins	yes
2.2	24mins	30IU	12mins	23mins	1:09mins	no
2.2	27mins	20IU	13mins	26mins	1:23mins	yes
2.2	24mins	30IU	12mins	23mins	1:09mins	no
2.2	33mins	20IU	12mins	32mins	1:05mins	yes
2.2	27mins	20IU	13mins	26mins	1:08mins	no
2.2	19mins	20IU	9mins	18mins	48mins	no
2.2	23mins	20IU	8 minutes	22 mins	1:13 mi9ns	no
2.2	32mins	20IU	12mins	31mins	1:21 mins	no
2.2	27mins	20IU	10mins	26 mins	1:16 mins	no
2.2	14mins	20IU	8minutes	13minutes	40mins	yes
2.2	16mins	20IU	7minutes	15minutes	43mins	no
2.2	19mins	20IU	9minutes	18mins	44mins	no
2.2	18mins	20IU	10mina	17mins	48mins	yes
2.2	19mins	20IU	10minutes	18mins	53mins	no
2.2	28mins	40IU	13minutes	27minutes	1:10mins	yes
2.2	29mins	20IU	16minutes	28minutes	1:08mins	no
2.2	21mins	20IU	12minutes	20mins	49mins	no
2.2	15mins	20IU	7mins	14mins	44mins	no
2.2	23mins	20IU	13mins	22mins	56mins	yes
2.2	23mins	20IU	8 minutes	22 mins	1:13 mi9ns	no

ime	spinal to delivery time	duration of surge	post spinal hypotension	atropine/dose	dose of ephedrin	number of ephedrine dos
	17 mins	1:10mins	yes	no	no	no
	22 mins	1:00 mins	yes	no	no	no
	16 mins	1:10mins	no	no	no	no
	16 mins	1:14 mins	yes	no	no	no
	16 mins	58 mins	yes	no	6mg	
	18 mins	46mins	yes	no	no	no
	17 mins	54 mins	no	no	no	no
	20 mins	1:20 mins	yes	no	6mg	
	16 mins	56 mins	no	no	no	no
	21 minutes	1:00 hr	no	no	no	no
	18 minutes	1:04 minutes	yes	no	no	no
	17 mins	1:10mins	yes	no	no	no
	22 mins	1:00 mins	yes	no	no	no
	16 mins	1:10mins	no	no	no	no
	16 mins	1:14 mins	yes	no	no	no
	16 mins	58 mins	yes	no	6mg	
	18 mins	46mins	yes	no	no	no
	20 mins	1:20 mins	yes	no	6mg	
	16 mins	56 mins	no	no	no	no
	21 minutes	1:00 hr	no	no	no	no
	18 mins	46mins	yes	no	no	no
	22 mins	1:13 mi9ns	no	no	6mg+6mg	
	16 mins	1:04 mins	no	no	no	no
	23 mins	1:08 mins	yes	no	6mg	no
	26mins	1:12 mins	no	no	no	no
	35 mins	1:42mins	yes	no	6mg	
	26 mins	1:16 mins	no	no	no	no
	22MINS	1:04 mins	no	no	no	no
	27mins	1:33mins	no	no	no	no
	23mins	1:08mins	yes	no	6mg+6mg+6mg	
	16mins	54 mins	no	no	no	no
	23mins	1:09mins	no	no	no	no
	24mins	1:12mins	yes	no	6mg+6mg	
	32 mins	1:45 mins	no	no	no	no
	30mins	1:32mins	no	no	no	no
	26mins	1:23mins	yes	no	6mg+6mg	
	32mins	1:05mins	yes	no	6mg+6mg+6mg+6mg	
	30mins	1:18mins	no	no	no	no
	25mins	1:04mins	no	no	no	no
	16mins	54 mins	no	no	no	no
	23mins	1:09mins	no	no	no	no
	24mins	1:12mins	yes	no	6mg+6mg	
	32 mins	1:45 mins	no	no	no	no
	30mins	1:32mins	no	no	no	no
	26mins	1:23mins	yes	no	6mg+6mg	
	32mins	1:05mins	yes	no	6mg+6mg+6mg+6mg	
	30mins	1:18mins	no	no	no	no
	25mins	1:04mins	no	no	no	no
	30mins	1:14mins	yes	no	6mg+6mg	
	26mins	1:08mins	no	no	no	no
	28mins	1:33mins	no	no	no	no
	31mins	1:21 mins	no	no	no	no
	26mins	1:12mins	yes	no	6mg+6mg+6mg	
	20mins	49mins	no	no	no	no
	34mins	1:15mins	no	no	no	no
	26mins	1:08mins	no	no	no	no
	30mins	1:12mins	no	no	no	no
	33mins	1:16mins	yes	no	6mg	
	37mins	1:43mins	no	no	no	no
	34mins	1:14mins	no	no	no	no
	31mins	1:12mins	yes	no	6mg+6mg+6mg	
	18mins	48mins	no	no	no	no
	22mins	1:10mins	no	no	no	no
	24mins	1:22mins	no	no	no	no
	30mins	1:30mins	yes	no	6mg+6mg+6mg+6mg	
	27mins	1:22mins	no	no	no	no
	28mins	1:16mins	no	no	no	no
	30mins	1:17mins	yes	no	6mg+6mg+6mg	
	33mins	1:16mins	yes	no	6mg	
	37mins	1:43mins	no	no	no	no
	34mins	1:14mins	no	no	no	no
	31mins	1:12mins	yes	no	6mg+6mg+6mg	
	18mins	48mins	no	no	no	no
	22mins	1:10mins	no	no	no	no
	34mins	1:22mins	no	no	no	no

ypotension	atropine/dose	dose of ephedrin	number of ephedrine doses	fetal weight	APGAR 1 minute	APGAR 5 minutes
	no	no	no	2.7kg	7	9
	no	no	no	3.2 kg	8	8
	no	no	no	2.2kg	7	8
	no	no	no	3.1kg	9	9
	no	6mg	1	2.8kg	10	10
	no	no	no	1.9kg	7	7
	no	no	no	2.6kg	7	8
	no	6mg	1	3.5kg	8	8
	no	no	no	2.9kg	6	6
	no	no	no	3.4 kg	8	8
	no	no	no	3.1kg	7	7
	no	no	no	2.7kg	7	9
	no	no	no	3.2 kg	8	8
	no	no	no	2.2kg	7	8
	no	no	no	3.1kg	9	9
	no	6mg	1	2.8kg	10	10
	no	no	no	1.9kg	7	7
	no	6mg	1	3.5kg	8	8
	no	no	no	2.9kg	6	6
	no	no	no	3.4 kg	8	8
	no	no	no	1.9kg	7	7
	no	6mg+6mg	2	3.1kg	8	8
	no	no	no	2.9kg	7	8
	no	6mg	no	2.8kg	8	8
	no	no	no	3.2kg	7	8
	no	6mg	1	2.9kg	8	8
	no	no	no	2.1kg	8	8
	no	no	no	3.8kg	7	8
	no	no	no	2.7kg	7	8
	no	6mg+6mg+6mg	3	3.1kg	8	8
	no	no	no	2.9kg	8	8
	no	no	no	3.1kg	7	7
	no	6mg+6mg	2	2.1kg	8	8
	no	no	no	2.2kg	8	8
	no	no	no	3.5kg	8	9
	no	6mg+6mg	2	3.2kg	8	8
	no	6mg+6mg+6mg+6mg	4	1.4kg	6	6
	no	no	no	2.1kg	7	8
	no	no	no	3.0kg	7	8
	no	no	no	2.9kg	8	8
	no	no	no	3.1kg	7	7
	no	6mg+6mg	2	2.1kg	8	8
	no	no	no	2.2kg	8	8
	no	no	no	3.5kg	8	9
	no	6mg+6mg	2	3.2kg	8	8
	no	6mg+6mg+6mg+6mg	4	1.4kg	6	6
	no	no	no	2.1kg	7	8
	no	no	no	3.0kg	7	8
	no	6mg+6mg	2	2.9kg	7	8
	no	no	no	2.8kg	7	8
	no	no	no	2.8kg	7	8
	no	no	no	3.1kg	8	9
	no	6mg+6mg+6mg	3	2.8kg	8	9
	no	no	no	3.1kg	8	8
	no	no	no	3.1kg	8	9
	no	no	no	2.8kg	7	8
	no	no	no	3.1kg	7	8
	no	6mg	1	2.8kg	8	9
	no	no	no	2.9kg	7	8
	no	no	no	4.0kg	8	8
	no	6mg+6mg+6mg	3	2.4kg	7	8
	no	no	no	2.8kg	8	9
	no	no	no	2.2kg	8	8
	no	no	no	3.7kg	8	8
	no	6mg+6mg+6mg+6mg	4	2.7kg	8	8
	no	no	no	2.8kg	7	8
	no	no	no	2.9kg	8	8
	no	6mg+6mg+6mg	3	3.2kg	8	9
	no	6mg	1	2.8kg	8	9
	no	no	no	2.9kg	7	8
	no	no	no	4.0kg	8	8
	no	6mg+6mg+6mg	3	2.4kg	7	8
	no	no	no	2.8kg	8	9
	no	no	[redacted]		8	8
	no	no	no	3.1kg	9	9

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23921								
2392123009845789	30	148	54	24.6		37	Big baby	GDM
2392123005641333	22	153	68	29	35+2		Primi with PPROM	nil
2392123000045389	31	151	67	29.3	36+3		Primi with chronic hyperter	hypertension
2392123006788901	21	156	64	26.3	39+4		primi with NPOL	nil
2392123000078642	22	155	68	28.3	38+4		previous LSCS in labour	nil
2392123000078979	30	166	70	27.3	39+3		precious pregnancy	nil
2392123000078653	23	154	56	23.6	39+3		Primi with NPOL	nil
2392123002378908	22	156	67	27.5		38	Primi with MSL	nil
2392123000023679	30	150	68	30.2	37+3		previous LSCS in labour	hypothyroidis
2392123002300456	28	149	60	27	38+3		Primi with breech	Anemia
2392123000045679	28	161	65	25		38	Primi with breech	nil
2392123000034569	27	166	70	25.45	36+6		Previous LSCS in labour	Hyperthyroidis
2392122005678903	22	158	68	27.3	38+5		Primi with breech,MSL	nil
2392123900980879	30	152	67	29	36+3		previous LSCS in labour	broncial astha
2392134567890868	22	166	56	20.3	39+3		Primi with transverse lie	nil
2392122004567899	28	148	59	26.9		38	previous LSCS in labour	nil
2392123009876378	21	158	66	26.5		28	Primi with PROM	Sickle cell An
2392123678906798	30	160	60	20.2	39+6		failed induction,preeclam	PE
2392134789909409	26	158	62	24.8	37+3		previous LSCS in labour	Hypothyroidis
2392100987368908	23	149	56	25.2		38	primi with NPOL	nil
2392123006789799	31	154	67	28.2		38	previous LSCS in labour	Seizure disor
23921345600987367	22	158	67	26.9	38+3		primi with GDM	GDM
23921345906790990	28	155	71	28.4		39	NPOL	nil
2392123009876543	25	156	68	27.9		38	Primi with PROM	nil
23921230096780754	32	158	60	24		37	previous LSCS in labour	Hypothyroidis
2392134897549578	23	158	60	24	41+3		primi with NPOL	nil
2392178599900969	21	154	54	22.7	36+3		breech presentation	nil
2398746666900023	34	158	61	24.4		36	previous LSCS in labour	GDM
2392156780056783	28	160	58	22.6		36	Previous LSCS,CPD	nil
2392100345678908	39	157	66	26.8		37	previous LSCS	Anemia
2392120000678643	21	149	68	30.6		38	primi with NPOL	nil
2392123003456706	22	156	61	25.1		40	previous LSCS in labour	nil
2392123007856436	28	130	48	28.4		38	short primi with breech	nil
2392123004897508	22	168	66	23.4		37	Primi with MSL	nil
2392123000089768	22	166	56	20.3	39+3		Primi with transverse lie	nil
2392123000005678	28	148	59	26.9		38	previous LSCS in labour	nil
2392123009345874	21	158	66	26.5		28	Primi with PROM	nil
2392130008547968	30	160	60	23.4	39+6		failed induction,preeclam	PE
2392123004563221	26	158	62	24.8	37+3		previous LSCS in labour	Hypothyroidis
2392123008975435	40	158	78	31.3		36	precious pregnancy	Obesity,hypot
2392123006789979	30	152	67	29	36+3		previous LSCS in labour	broncial astha
2392123005638909	22	166	56	20.3	39+3		Primi with transverse lie	nil
2392123006789799	22	156	67	27.5		38	Primi with MSL	nil
2392123006789797	31	154	67	28.2		38	previous LSCS in labour	Seizure disor
2392123007895678	26	158	62	24.8	37+3		previous LSCS in labour	Hypothyroidis
2392122002109996	19	145	54	25.7	41+3		post term	nil
2392123007890567	22	153	68	29	35+2		Primi with PPROM	nil
239212300 230345	22	156	61	25.1		40	previous LSCS in labour	nil
2392122004567899	28	148	59	26.9		38	previous LSCS in labour	nil
2392123003456707	22	156	60	24.6		40	previous LSCS in labour	nil
2392134009864567	21	158	66	26.5		28	Primi with PROM	Sickle cell An
2392123007865438	34	158	66	26.5	38+6		previous LSCS in labour	Anemia
2392123007687879	31	151	57	25.11	36+3		Primi with chronic hyperter	hypertension
2392123004589089	22	154	54	22.7		39	primi with breech	nil
2392123009876579	28	155	71	29.5		39	NPOL	nil
2392178599900945	21	154	54	22.7	36+3		breech presentation	nil
239212300 42270	30	156	55	22.6	39+3		primi with NPOL	nil
239212300 28808	28	155	51	21.25		40	primi with MSL	Hyperthyroidis
239212300 28809	33	157	66	26.82		38	previous LSCS in labour	nil
239212300 43289	30	158	60	24.09	38+4		previous LSCS in labour	nil
239212300 34567	26	156	61	25.1	39+3		Primi with MSL	nil
2392122 0067891	28	151	52	22.8		40	Primi with GDM,big baby	GDM
239212300 23035	33	154	70	29.5	38+3		Previous LSCS,CPD	nil
239212300 23125	28	158	66	26.5		38	Primi with PROM,NPL	nil
239212300 45632	22	151	57	25.1	39+3		Primi with 2nd stage arrest	nil
239212300 74589	28	160	58	22.6	38+3		previous LSCS in labour	nil
239212300 34890	26	158	58	23.2	39+6		Primi with transverse lie	nil

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m	II					
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	I	4	0	0	3	nil
	I	1	0	0	0	nil
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	I	1	0	0	0	nil
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m	II	2	1	1	0	nil
	I	1	0	0	0	nil
der	II	2	1	1	0	nil
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	I	3	2	2	0	nil
	I	1	0	0	0	nil
m	II	3	1	1	1	nil
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	I	2	1	1	0	nil
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	II	3	1	1	1	nil
m	II	2	1	1	0	nil
hyroi	II	4	0	0	3	nil
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	I	1	0	0	0	nil
der	II	2	1	1	0	nil
m	II	2	1	1	0	nil
	I	2	0	0	1	no
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	I	2	1	1	0	nil
	I	3	1	1	1	nil
	I	2	1	1	0	nil
emia	II	1	0	0	0	nil
	II	2	1	1	0	nil
	II	1	0	0	0	nil
	I	1	0	0	0	nil
	I	3	2	2	0	nil
	I	2	1	1	0	nil
	I	1	0	0	0	nil
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	II	1	0	0	0	nil
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	I	1	0	0	0	nil

	100	130	90	103	3.1
	102	122	68	86	7.8
	80	120	80	93	2.4
	100	104	55	71	3.1
	80	102	56	71	2.8
	118	130	80	96	1.9
	102	106	56	72	4.8
	111	128	67	87	2.2
	89	138	70	92	5.1
	103	111	56	74	4.1
	102	138	78	98	5.2
	68	122	70	87	3.1
	77	114	58	76	6.2
	98	138	70	92	5.1
	108	110	80	90	3.4
	68	117	89	98	3.2
	105	98	50	66	6.6
	87	150	110	123	3.3
	66	120	76	90	2.1
	78	104	56	72	6.7
	88	114	60	78	2.8
	99	114	68	83	2.5
	104	122	77	92	2.8
	80	104	55	71	6.3
	78	130	88	102	2.3
	78	110	80	90	4.8
	90	110	68	82	3.1
	88	130	90	103	4.1
	89	114	68	83	2.9
	124	100	72	81	6.8
	102	110	68	82	2.8
	78	110	70	83	3.4
	76	112	75	87	6.5
	88	134	77	96	2.1
	108	110	80	90	3.4
	68	117	89	98	3.2
	105	98	50	66	6.6
	87	150	110	123	3.3
	66	120	76	90	2.1
	77	140	96	110	1.8
	98	138	70	92	5.1
	108	110	80	90	3.4
	111	128	67	87	2.2
	88	114	60	78	2.8
	66	120	76	90	2.1
	99	100	66	77	7.8
	102	122	68	86	7.8
	78	110	70	83	3.4
	68	117	89	98	3.2
	78	110	70	83	3.4
	105	98	50	66	6.6
	58	110	60	76	2.8
	80	120	80	93	2.4
	112	124	78	93	3.4
	104	122	77	92	2.8
	90	110	68	82	3.1
	88	118	70	86	4.5
	104	138	90	102	2.2
	98	128	80	96	3.3
	102	114	79	90	5.6
	100	114	76	88	2.5
	104	104	64	77	7.1
	88	138	88	104	2.8
	90	129	88	101	3.1
	88	130	80	96	2.2
	102	120	80	93	5.5
	112	124	78	93	3.4

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	II	2	1	1	0	nil
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	II	1	0	0	0	nil
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	I	4	0	0	3	nil
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	I	1	0	0	0	nil
m	II	2	1	1	0	nil
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	I	1	0	0	0	nil
sm,P	II	3	1	1	1	nil
	I	1	0	0	0	nil
ama	II	2	1	1	0	nil
	I	1	0	0	0	nil
	I	3	1	1	1	nil
emia	II	1	0	0	0	nil
	II	3	1	1	1	nil
m	II	2	1	1	0	nil
	I	1	0	0	0	nil
der	II	2	1	1	0	nil
	II	1	0	0	0	nil
	I	3	2	2	0	nil
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m	II	3	1	1	1	nil
	I	1	0	0	0	nil
	I	2	1	1	0	nil
	II	3	2	2	0	nil
	I	2	1	1	0	nil
	II	4	2	1	1	nil
	I	1	0	0	0	nil
	I	2	1	1	0	nil
	I	1	0	0	0	nil
	I	1	0	0	0	nil
	I	1	0	0	0	nil
	I	3	1	1	1	nil
	I	1	0	0	0	nil
	II	3	1	1	1	nil
m	II	2	1	1	0	nil
hyroi	II	4	0	0	3	nil
ama	II	2	1	1	0	nil
	I	1	0	0	0	nil
	I	1	0	0	0	nil
der	II	2	1	1	0	nil
m	II	2	1	1	0	nil
	I	2	0	0	1	no
	I	1	0	0	0	nil
	I	2	1	1	0	nil
	I	3	1	1	1	nil
	I	2	1	1	0	nil
emia	II	1	0	0	0	nil
	II	2	1	1	0	nil
	II	1	0	0	0	nil
	I	1	0	0	0	nil
	I	3	2	2	0	nil
	I	2	1	1	0	nil
	I	1	0	0	0	nil
sm,P	II	1	0	0	0	nil
	I	2	1	0	0	nil
	I	3	1	1	1	nil
	I	1	0	0	0	nil
	II	1	0	0	0	nil
	I	2	1	1	0	nil
	I	1	0	0	0	nil
	I	1	0	0	0	nil
	I	2	1	1	0	nil
	I	1	0	0	0	nil

	100	130	90	103	3.1
	102	122	68	86	7.8
	80	120	80	93	2.4
	100	104	55	71	3.1
	80	102	56	71	2.8
	118	130	80	96	1.9
	102	106	56	72	4.8
	111	128	67	87	2.2
	89	138	70	92	5.1
	103	111	56	74	4.1
	102	138	78	98	5.2
	68	122	70	87	3.1
	77	114	58	76	6.2
	98	138	70	92	5.1
	108	110	80	90	3.4
	68	117	89	98	3.2
	105	98	50	66	6.6
	87	150	110	123	3.3
	66	120	76	90	2.1
	78	104	56	72	6.7
	88	114	60	78	2.8
	99	114	68	83	2.5
	104	122	77	92	2.8
	80	104	55	71	6.3
	78	130	88	102	2.3
	78	110	80	90	4.8
	90	110	68	82	3.1
	88	130	90	103	4.1
	89	114	68	83	2.9
	124	100	72	81	6.8
	102	110	68	82	2.8
	78	110	70	83	3.4
	76	112	75	87	6.5
	88	134	77	96	2.1
	108	110	80	90	3.4
	68	117	89	98	3.2
	105	98	50	66	6.6
	87	150	110	123	3.3
	66	120	76	90	2.1
	77	140	96	110	1.8
	98	138	70	92	5.1
	108	110	80	90	3.4
	111	128	67	87	2.2
	88	114	60	78	2.8
	66	120	76	90	2.1
	99	100	66	77	7.8
	102	122	68	86	7.8
	78	110	70	83	3.4
	68	117	89	98	3.2
	78	110	70	83	3.4
	105	98	50	66	6.6
	58	110	60	76	2.8
	80	120	80	93	2.4
	112	124	78	93	3.4
	104	122	77	92	2.8
	90	110	68	82	3.1
	88	118	70	86	4.5
	104	138	90	102	2.2
	98	128	80	96	3.3
	102	114	79	90	5.6
	100	114	76	88	2.5
	104	104	64	77	7.1
	88	138	88	104	2.8
	90	129	88	101	3.1
	88	130	80	96	2.2
	102	120	80	93	5.5
	112	124	78	93	3.4

96	5.6	80	112	68	82	6
93	2.1	93	118	67	84	3
103	3.1	104	124	68	88	3
86	7.8	94	94	48	60	8
93	2.4	82	114	68	83	2
71	3.1	100	98	48	64	3
71	2.8	88	104	56	72	3
96	1.9	114	124	66	85	2
72	4.8	104	90	60	70	6
87	2.2	112	112	66	81	3
92	5.1	90	118	66	83	6
74	4.1	90	90	48	62	5
98	5.2	100	103	67	79	6
87	3.1	71	118	67	84	3
76	6.2	77	102	48	66	5
92	5.1	90	118	66	83	6
90	3.4	102	100	68	78	3
98	3.2	77	100	60	73	3
66	6.6	106	80	40	53	5
123	3.3	90	148	100	116	3
90	2.1	70	115	75	88	2
72	6.7	90	88	40	56	7
78	2.8	90	108	58	74	3
83	2.5	104	104	70	81	2
92	2.8	102	118	79	92	
71	6.3	98	80	38	52	7
102	2.3	88	114	76	88	2
90	4.8	87	90	60	70	5
82	3.1	104	98	58	68	4
103	4.1	92	128	88	101	5
83	2.9	94	110	78	88	2
81	6.8	130	78	57	64	7
82	2.8	110	98	66	76	3
83	3.4	80	100	68	78	3
87	6.5	88	90	67	74	7
96	2.1	94	123	88	94	3
90	3.4	102	100	68	78	3
98	3.2	77	100	60	73	3
66	6.6	106	80	40	53	5
123	3.3	90	148	100	116	3
90	2.1	70	115	75	88	2
110	1.8	80	138	90	106	2
92	5.1	90	118	66	83	6
90	3.4	102	100	68	78	3
87	2.2	112	112	66	81	3
78	2.8	90	108	58	74	3
90	2.1	70	115	75	88	2
77	7.8	104	98	60	73	8
86	7.8	94	94	48	60	8
83	3.4	80	100	68	78	3
98	3.2	77	100	60	73	3
83	3.4	80	100	68	78	3
66	6.6	106	80	40	53	5
76	2.8	66	108	58	74	3
93	2.4	82	114	68	83	2
93	3.4	114	114	84	94	4
92	2.8	102	118	79	92	
82	3.1	104	98	58	68	4
86	4.5	90	100	70	80	5
102	2.2	114	124	70	88	2
96	3.3	112	120	80	93	3
90	5.6	112	90	68	75	6
88	2.5	108	110	78	88	3
77	7.1	110	90	58	68	7
104	2.8	92	124	76	92	3
101	3.1	94	114	68	83	3
96	2.2	92	128	76	93	2
93	5.5	114	112	60	77	5
93	3.4	114	114	84	94	4

8	114	56	75	3.1	450ml	90
0	109	68	81	4.1	400ml	104
2	80	40	53	8.8	550ml	102
8	116	70	85	3.1	400ml	86
3	112	68	82	3.5	450ml	102
0	102	56	71	3.3	450ml	88
8	118	58	78	3.1	450ml	112
2	84	38	53	6.8	450ml	112
8	108	56	73	3.3	450ml	108
0	114	60	78	6.7	400ml	90
0	90	56	67	6.1	400ml	90
2	94	48	63	6.6	500ml	100
6	114	56	75	3.3	400ml	68
0	90	48	62	6.8	450ml	81
0	114	60	78	6.7	400ml	90
2	100	70	80	3.3	400ml	109
8	104	74	84	4.2	350ml	78
4	78	39	52	7.1	600ml	102
4	140	110	120	3.9	300ml	90
7	110	66	80	2.6	280ml	75
8	90	45	60	6.8	450ml	90
2	106	58	74	3.3	450ml	90
2	104	68	80	3	500ml	100
0	108	68	81	3.8	450ml	108
4	99	44	62	6.8	450ml	100
0	110	66	80	2.4	400ml	95
0	84	58	66	6.8	400ml	102
0	100	58	72	4.8	380ml	100
9	120	87	98	4.5	350ml	90
7	90	56	67	5.6	400ml	100
8	86	60	68	8.1	800ml	114
2	100	70	80	3.3	350ml	108
8	94	68	76	4.5	400ml	89
0	80	48	58	8.8	500ml	94
0	113	77	89	3.3	300ml	90
2	100	70	80	3.3	400ml	109
8	104	74	84	4.2	350ml	78
4	78	39	52	7.1	600ml	102
4	140	110	120	3.9	300ml	90
7	110	66	80	2.6	280ml	75
8	134	90	104	2.6	300ml	80
0	114	60	78	6.7	400ml	90
2	100	70	80	3.3	400ml	109
8	108	56	73	3.3	450ml	108
2	106	58	74	3.3	450ml	90
7	110	66	80	2.6	280ml	75
8	84	44	57	12	500ml	116
2	80	40	53	8.8	550ml	102
8	94	68	76	4.5	400ml	89
8	104	74	84	4.2	350ml	78
8	94	68	76	4.5	400ml	89
4	78	39	52	7.1	600ml	102
8	102	48	66	3.6	400ml	67
8	116	70	85	3.1	400ml	86
8	94	70	78	6.8	400ml	99
0	108	68	81	3.8	450ml	108
0	100	58	72	4.8	380ml	100
0	88	50	62	5.5	350ml	94
8	120	88	98	2.6	300ml	109
2	122	80	94	4.1	400ml	108
4	88	54	65	6.8	350ml	113
4	100	60	73	3	350ml	108
0	80	44	56	8.1	400ml	108
0	118	76	90	2.8	400ml	86
2	118	68	84	4.1	450ml	104
0	126	89	101	3.2	450ml	90
6	88	57	67	6.1	400ml	108
8	94	70	78	6.8	400ml	99

112	68	82	6.8	350ml	80	104
118	67	84	3.1	300ml	88	114
124	68	88	3.7	280ml	100	109
94	48	60	8.1	350ml	102	80
114	68	83	2.9	350ml	88	116
98	48	64	3.3	350ml	103	112
104	56	72	3.1	400ml	80	102
124	66	85	2.2	350ml	108	118
90	60	70	6.5	300ml	102	84
112	66	81	3.1	350ml	108	108
118	66	83	6.5	250ml	90	114
90	48	62	5.6	300ml	100	90
103	67	79	6.2	400ml	102	94
118	67	84	3.3	280ml	66	114
102	48	66	5.6	300ml	80	90
118	66	83	6.5	250ml	90	114
100	68	78	3.8	300ml	102	100
100	60	73	3.3	300ml	78	104
80	40	53	5.8	400ml	104	78
148	100	116	3.8	200ml	94	140
115	75	88	2.6	200ml	77	110
88	40	56	7.1	250ml	88	90
108	58	74	3.2	300ml	92	106
104	70	81	2.8	330ml	102	104
118	79	92	3	300ml	110	108
80	38	52	7.8	400ml	94	99
114	76	88	2.4	350ml	80	110
90	60	70	5.8	220ml	80	84
98	58	68	4.4	250ml	100	100
128	88	101	5.1	300ml	89	120
110	78	88	2.9	300ml	97	90
78	57	64	7.8	500ml	118	86
98	66	76	3.1	300ml	102	100
100	68	78	3.6	260ml	88	94
90	67	74	7.2	320ml	90	80
123	88	94	3.1	200ml	90	113
100	68	78	3.8	300ml	102	100
100	60	73	3.3	300ml	78	104
80	40	53	5.8	400ml	104	78
148	100	116	3.8	200ml	94	140
115	75	88	2.6	200ml	77	110
138	90	106	2.1	250ml	88	134
118	66	83	6.5	250ml	90	114
100	68	78	3.8	300ml	102	100
112	66	81	3.1	350ml	108	108
108	58	74	3.2	300ml	92	106
115	75	88	2.6	200ml	77	110
98	60	73	8.8	300ml	118	84
94	48	60	8.1	350ml	102	80
100	68	78	3.6	260ml	88	94
100	60	73	3.3	300ml	78	104
100	68	78	3.6	260ml	88	94
80	40	53	5.8	400ml	104	78
108	58	74	3.5	280ml	68	102
114	68	83	2.9	350ml	88	116
114	84	94	4.8	250ml	98	94
118	79	92	3	300ml	110	108
98	58	68	4.4	250ml	100	100
100	70	80	5.5	200ml	90	88
124	70	88	2.4	250ml	108	120
120	80	93	3.8	300ml	102	122
90	68	75	6.6	280ml	114	88
110	78	88	3.2	260ml	104	100
90	58	68	7.5	350ml	110	80
124	76	92	3.1	300ml	80	118
114	68	83	3.8	300ml	102	118
128	76	93	2.8	300ml	90	126
112	60	77	5.9	250ml	106	88
114	84	94	4.8	250ml	98	94

38	94	48	63	6.8		550ml	90
90	112	68	82	3.3		500ml	88
04	114	56	75	5.1		550ml	102
02	90	48	62	7.1		700ml	104
86	114	68	83	3.4		550ml	86
02	112	58	76	4.1		600ml	100
88	112	68	82	2.1		600ml	92
12	114	56	75	3.3		650ml	112
12	90	45	60	7.5		700ml	106
08	112	60	77	3.7		600ml	108
90	100	56	70	5.8		600ml	90
90	100	48	65	6.5		550ml	90
00	94	50	64	6.8		600ml	102
58	108	60	76	3.3		500ml	62
81	78	34	48	7.1		800ml	90
90	100	56	70	5.8		600ml	90
09	108	68	81	3.7		550ml	109
78	106	78	87	3.8		400ml	77
02	92	64	73	6.8		700ml	102
90	140	116	124	3.3		400ml	94
75	106	58	74	3.1		400ml	80
90	92	40	57	5.6		600ml	89
90	100	57	71	3.6		670ml	94
00	98	56	70	3.8		700ml	98
08	104	77	86	4.9		600ml	100
00	100	68	78	6.4		600ml	103
95	104	68	80	2.9		780ml	90
02	90	60	70	4.8		500ml	94
00	100	70	80	5		500ml	96
90	118	70	86	4.1		500ml	90
00	92	68	76	6		450ml	98
14	94	65	75	7.8		820ml	114
08	100	70	80	3.8		450ml	100
89	104	78	86	4.8		450ml	88
94	94	60	73	5.6		600ml	90
90	108	68	81	3.7		450ml	90
09	108	68	81	3.7		550ml	109
78	106	78	87	3.8		400ml	77
02	92	64	73	6.8		700ml	102
90	140	116	124	3.3		400ml	94
75	106	58	74	3.1		400ml	80
30	130	80	96	2.8		350ml	77
90	100	56	70	5.8		600ml	90
09	108	68	81	3.7		550ml	109
08	112	60	77	3.7		600ml	108
90	100	57	71	3.6		670ml	94
75	106	58	74	3.1		400ml	80
16	88	68	75	9.8		650ml	114
02	90	48	62	7.1		700ml	104
89	104	78	86	4.8		450ml	88
78	106	78	87	3.8		400ml	77
89	104	78	86	4.8		450ml	88
02	92	64	73	6.8		700ml	102
57	104	49	67	4		600ml	60
86	114	68	83	3.4		550ml	86
99	88	58	68	7.8		650ml	100
08	104	77	86	4.9		600ml	100
00	100	70	80	5		500ml	96
94	80	44	58	6.5		500ml	102
09	128	80	96	2.8		400ml	108
08	124	84	97	4.2		500ml	102
13	84	44	57	6.9		600ml	108
08	102	64	76	3.2		500ml	106
08	88	50	62	8.3		550ml	110
86	120	80	93	3.3		550ml	90
04	116	70	85	3.8		500ml	108
90	126	68	87	3.8		600ml	88
08	78	40	52	6.4		600ml	100
99	88	58	68	7.8		650ml	100

500ml	88	114	58	76	3.1		650m
550ml	102	108	66	80	6.2		700m
700ml	104	94	40	58	6.8		800m
550ml	86	108	56	73	3.8		700m
600ml	100	112	67	82	4.1		750m
600ml	92	114	55	74	3.2		790m
650ml	112	120	78	92	3.6		700m
700ml	106	100	60	73	5.8		800m
600ml	108	108	56	73	3.6		750m
600ml	90	110	65	80	4.5		800m
550ml	90	100	50	66	6.8		800m
600ml	102	103	56	71	7.1		850m
500ml	62	112	58	76	2.9		700m
800ml	90	88	45	59	7.7		900m
600ml	90	110	65	80	4.5		800m
550ml	109	106	67	87	4.2		700m
400ml	77	104	68	80	4.1		450m
700ml	102	98	68	78	6.5		800m
400ml	94	138	95	109	4.2		500m
400ml	80	100	59	72	3.6		600m
600ml	89	100	60	73	5.5		750m
670ml	94	106	48	67	3.5		800m
700ml	98	100	58	72	3.6		880m
600ml	100	100	48	65	6.8		880m
600ml	103	92	38	56	7.2		700m
780ml	90	104	66	78	3.6		880m
500ml	94	100	72	81	5.6		600m
500ml	96	104	68	80	5.1		600m
500ml	90	118	70	86	3.9		660m
450ml	98	98	70	79	5.8		500m
820ml	114	100	70	80	6.8		850m
450ml	100	104	68	80	3.5		600m
450ml	88	104	68	80	4.6		500m
600ml	90	100	68	78	5.5		700m
450ml	90	110	68	82	3.9		600m
550ml	109	106	67	87	4.2		700m
400ml	77	104	68	80	4.1		450m
700ml	102	98	68	78	6.5		800m
400ml	94	138	95	109	4.2		500m
400ml	80	100	59	72	3.6		600m
350ml	77	134	86	102	2.9		450m
600ml	90	110	65	80	4.5		800m
550ml	109	106	67	87	4.2		700m
600ml	108	108	56	73	3.6		750m
670ml	94	106	48	67	3.5		800m
400ml	80	100	59	72	3.6		600m
650ml	114	104	74	84	4.8		800m
700ml	104	94	40	58	6.8		800m
450ml	88	104	68	80	4.6		500m
400ml	77	104	68	80	4.1		450m
450ml	88	104	68	80	4.6		500m
700ml	102	98	68	78	6.5		800m
600ml	60	104	50	68	4.1		750m
550ml	86	108	56	73	3.8		700m
650ml	100	94	70	78	6.5		750m
600ml	100	100	48	65	6.8		880m
500ml	96	104	68	80	5.1		600m
500ml	102	90	60	70	5.1		600m
400ml	108	124	88	100	2.4		500m
500ml	102	118	70	86	4.8		600m
600ml	108	94	66	75	6.6		700m
500ml	106	110	70	83	2.9		650m
550ml	110	90	50	63	7.9		700m
550ml	90	122	68	86	3.5		700m
500ml	108	118	78	91	3.9		750m
600ml	88	130	80	96	3.2		700m
600ml	100	88	56	66	6.8		750m
650ml	100	94	70	78	6.5		750m

650ml	90	108	60	76	3.2	740ml
700ml	104	112	65	80	5.2	900ml
800ml	102	100	48	65	6.1	1000ml
700ml	88	106	50	68	3.3	850ml
750ml	104	112	68	82	4.4	850ml
790ml	90	112	58	76	3.3	900ml
700ml	110	114	68	83	4.1	900ml
800ml	102	114	56	75	6.7	1000ml
750ml	108	110	60	76	3.6	900ml
800ml	90	112	54	73	5.1	1000ml
800ml	90	100	60	73	6.7	1000ml
850ml	100	104	56	71	7.3	900ml
700ml	66	112	58	76	3	850ml
900ml	90	94	48	63	7.8	1000ml
800ml	90	112	54	73	5.1	1000ml
700ml	100	104	58	73	4.8	850ml
450ml	88	92	48	62	6.8	700ml
800ml	102	96	58	70	5.8	900ml
500ml	90	140	98	112	3.8	700ml
600ml	78	98	50	66	4.4	800ml
750ml	90	102	58	72	6.1	800ml
800ml	90	106	76	86	3.6	900ml
880ml	90	100	56	70	3.8	1000ml
880ml	100	100	60	73	6	1000ml
700ml	102	100	60	73	6.8	880ml
880ml	90	110	68	82	4.1	920ml
600ml	96	104	78	86	5.1	800ml
600ml	102	108	78	88	5.8	900ml
660ml	90	110	75	86	3.8	780ml
500ml	100	98	70	79	5.5	680ml
850ml	115	100	62	74	5.5	900ml
600ml	100	104	68	80	3.8	780ml
500ml	88	108	88	98	4.8	700ml
700ml	90	100	66	77	6.5	800ml
600ml	92	108	76	86	4.1	700ml
700ml	100	104	58	73	4.8	850ml
450ml	88	92	48	62	6.8	700ml
800ml	102	96	58	70	5.8	900ml
500ml	90	140	98	112	3.8	700ml
600ml	78	98	50	66	4.4	800ml
450ml	80	132	82	98	3.1	500ml
800ml	90	112	54	73	5.1	1000ml
700ml	100	104	58	73	4.8	850ml
750ml	108	110	60	76	3.6	900ml
800ml	90	106	76	86	3.6	900ml
600ml	78	98	50	66	4.4	800ml
800ml	111	108	68	81	3.5	850 ml
800ml	102	100	48	65	6.1	1000ml
500ml	88	108	88	98	4.8	700ml
450ml	88	92	48	62	6.8	700ml
500ml	88	108	88	98	4.8	700ml
800ml	102	96	58	70	5.8	900ml
750ml	66	106	56	73	4.7	880ml
700ml	88	106	50	68	3.3	850ml
750ml	104	98	68	78	5.2	800ml
880ml	100	100	60	73	6	1000ml
600ml	102	108	78	88	5.8	900ml
600ml	90	100	60	73	4.8	700ml
500ml	104	128	80	96	2.2	650ml
600ml	102	124	76	92	5.2	700ml
700ml	110	96	68	77	6.8	800ml
650ml	108	106	68	80	3.1	750ml
700ml	110	92	64	73	8	900ml
700ml	88	126	80	95	2.9	850ml
750ml	106	120	74	89	3.8	900ml
700ml	88	132	78	96	3.9	950ml
750ml	102	90	56	67	7	1000ml
750ml	104	98	68	78	5.2	800ml

740ml	88	114	60	78	3.8	900ml	87
900ml	90	108	66	80	4.5	1000ml	104
1000ml	104	102	66	78	5.5	1200ml	100
850ml	90	108	64	78	2.8	1000ml	88
850ml	112	108	56	73	4.1	1000ml	108
900ml	80	116	68	84	3.3	1100ml	90
900ml	112	114	68	83	2.8	1200ml	114
1000ml	102	100	68	78	5.6	1300ml	102
900ml	108	120	73	88	2.9	1100ml	108
1000ml	90	112	60	77	4.8	1250ml	88
1000ml	94	104	64	77	6.8	1300ml	90
900ml	102	100	60	73	6.8	1100ml	100
850ml	64	104	70	81	2.8	1000ml	64
1000ml	100	100	60	73	6.6	1200ml	90
1000ml	90	112	60	77	4.8	1250ml	88
850ml	104	110	78	88	4.5	900ml	108
700ml	96	90	54	66	5.5	860ml	89
900ml	100	97	58	71	5.2	1100ml	104
700ml	104	138	110	119	3.4	890ml	100
800ml	80	100	64	76	3.8	900ml	89
800ml	88	102	58	72	5.8	950ml	90
900ml	90	102	69	80	3.8	1000ml	80
1000ml	102	100	58	72	3.8	1200ml	100
1000ml	103	109	56	73	5.8	1300ml	102
880ml	102	100	56	70	6.1	1000ml	104
920ml	92	112	56	74	4.4	1100ml	99
800ml	90	104	78	86	5.3	900ml	96
900ml	102	110	88	95	4.8	1000ml	100
780ml	90	110	68	82	3.9	850ml	98
680ml	98	102	76	84	4.8	760ml	99
900ml	110	108	68	81	5.1	950ml	104
780ml	102	110	67	81	4.1	800ml	98
700ml	80	110	66	84	4.3	780ml	89
800ml	98	104	68	80	6.3	800ml	88
700ml	90	111	66	81	4.4	750ml	99
850ml	104	110	78	88	4.5	900ml	108
700ml	96	90	54	66	5.5	860ml	89
900ml	100	97	58	71	5.2	1100ml	104
700ml	104	138	110	119	3.4	890ml	100
800ml	80	100	64	76	3.8	900ml	89
500ml	88	138	90	106	3	800ml	80
1000ml	90	112	60	77	4.8	1250ml	88
850ml	104	110	78	88	4.5	900ml	108
900ml	108	120	73	88	2.9	1100ml	108
900ml	90	102	69	80	3.8	1000ml	80
800ml	80	100	64	76	3.8	900ml	89
850 ml	108	106	66	79	3.2	1150ml	112
1000ml	104	102	66	78	5.5	1200ml	100
700ml	80	110	66	84	4.3	780ml	89
700ml	96	90	54	66	5.5	860ml	89
700ml	80	110	66	84	4.3	780ml	89
900ml	100	97	58	71	5.2	1100ml	104
880ml	68	108	60	78	5.2	950ml	65
850ml	90	108	64	78	2.8	1000ml	88
800ml	108	110	88	95	4.8	1000ml	98
1000ml	103	109	56	73	5.8	1300ml	102
900ml	102	110	88	95	4.8	1000ml	100
700ml	94	112	70	84	5.2	900ml	94
650ml	110	130	90	103	2.8	750ml	108
700ml	104	128	80	96	4.8	800ml	104
800ml	108	104	70	81	6.1	900ml	110
750ml	106	108	68	81	3.3	900ml	104
900ml	102	100	64	76	7.4	1000ml	106
850ml	90	130	70	86	3.2	1000ml	90
900ml	99	122	68	86	4	1000ml	100
950ml	88	130	86	100	4.2	1100ml	90
1000ml	100	102	58	72	6.9	1200ml	102
800ml	108	110	88	95	4.8	1000ml	98

108	60	76	3.1	1200ml	2.2	38mins
110	68	82	3.9	1200ml	2.2	35mins
104	65	78	5.3	1300ml	2.2	32mins
110	68	82	2.9	1200ml	2.2	19mins
114	67	82	3.3	1300ml	2.2	23mins
108	67	80	3.6	1200ml	2.2	35mins
120	68	85	3.1	1350ml	2.2	29mins
100	68	78	6.1	1400ml	2.2	31mins
120	70	86	3.1	1300ml	2.2	33mins
114	56	75	6.6	1400ml	2.2	34mins
108	64	78	6.9	1400ml	2.2	34mins
102	60	74	6.6	1300ml	2.2	31mins
108	56	73	3.3	1200ml	2.2	34mins
102	58	72	5.8	1300ml	2.2	31mins
114	56	75	6.6	1400ml	2.2	27mins
120	70	88	3.6	1100ml	2.2	31mins
96	60	72	4.8	1000ml	2.2	27mins
98	58	71	6.5	1300ml	2.2	33mins
138	90	106	3.5	1000ml	2.2	31mins
102	57	72	3.9	1100ml	2.2	26mins
100	58	72	5.5	1100ml	2.2	31mins
106	58	74	4	1200ml	2.2	27mins
106	58	74	3.9	1300ml	2.2	29mins
100	66	77	4.5	1400ml	2.2	32mins
104	60	74	6.6	1100ml	2.2	27mins
108	68	81	5.1	1250ml	2.2	21mins
110	70	83	4.1	1000ml	2.2	36mins
108	68	81	4.9	1100ml	2.2	27mins
110	78	88	4.1	920ml	2.2	23mins
100	77	84	4.5	800ml	2.2	28mins
108	78	88	4.9	1000ml	2.2	24mins
104	68	80	4.8	850ml	2.2	17mins
116	66	82	5.2	850ml	2.2	24mins
108	60	76	5.8	900ml	1.8	25mins
110	78	88	3.8	1000ml	2.2	33mins
120	70	88	3.6	1100ml	2.2	31mins
96	60	72	4.8	1000ml	2.2	27mins
98	58	71	6.5	1300ml	2.2	33mins
138	90	106	3.5	1000ml	2.2	31mins
102	57	72	3.9	1100ml	2.2	26mins
132	86	101	2.8	1000ml	2.2	21mins
114	56	75	6.6	1400ml	2.2	27mins
120	70	88	3.6	1100ml	2.2	31mins
120	70	86	3.1	1300ml	2.2	33mins
106	58	74	4	1200ml	2.2	27mins
102	57	72	3.9	1100ml	2.2	26mins
108	78	88	3	1400ml	2.2	17mins
104	65	78	5.3	1300ml	2.2	32mins
116	66	82	5.2	850ml	2.2	24mins
96	60	72	4.8	1000ml	2.2	27mins
116	66	82	5.2	850ml	2.2	24mins
98	58	71	6.5	1300ml	2.2	33mins
105	70	81	4.4	1020ml	2.2	27mins
110	68	82	2.9	1200ml	2.2	19mins
110	80	90	5.4	1100ml	2.2	23mins
100	66	77	4.5	1400ml	2.2	32mins
108	68	81	4.9	1100ml	2.2	27mins
110	64	79	5.8	1000ml	2.2	14mins
130	88	102	3.2	900ml	2.2	16mins
128	80	96	4.6	1000ml	2.2	19mins
108	66	80	6.8	1000ml	2.2	18mins
106	78	87	3.5	1000ml	2.2	19mins
100	66	77	7.8	1200ml	2.2	28mins
128	76	93	3.4	1300ml	2.2	29mins
124	78	93	4.5	1200ml	2.2	21mins
128	78	94	4.5	1200ml	2.2	15mins
104	67	79	7.2	1350ml	2.2	23mins
110	80	90	5.4	1100ml	2.2	23mins

	I	2	1	1	0	no	105	114
	I	3	2	2	0	n0	67	114
	II	1	0	0	0	nil	106	160
	II	2	1	1	0	no	105	114
	II	3	2	2	0	n0	67	114
	II	1	0	0	0	nil	69	148
ım	III	1	0	0	0	nil	102	170
	II	1	0	0	0	nil	102	140
ım	II	4	3	2	1	nil	88	178
	I	3	1	1	1	nil	87	150
ım	II	4	3	2	1	nil	88	178
	II	3	1	1	1	nil	87	150
	II	1	0	0	0	nil	88	168
	II	1	0	0	0	nil	78	178
	I	3	0	0	2	nil	102	140
	III	1	0	0	0	nil	78	178
	II	1	0	0	0	nil	90	159
	II	4	2	1	1	nil	88	140
ım	III	4	3	2	1	nil	88	178
	II	3	1	1	1	nil	87	150
	II	1	0	0	0	nil	88	168
ım	II	1	0	0	0	nil	102	170
	II	1	0	0	0	nil	102	140
ım	II	4	3	2	1	nil	88	178
	II	3	1	1	1	nil	87	150
ım	II	4	3	2	1	nil	88	178
	II	1	0	0	0	nil	88	168
	II	1	0	0	0	nil	102	140
	I	1	0	0	0	nil	102	140
	II	1	0	0	0	nil	90	159
	II	1	0	0	0	nil	106	160

2392122002399945	33	159	68	26.9	34+3	pre ecclampsia ,previous L	preeclampsia	I
2392122012018792	28	156	56	23	38	preeclampsia	preeclampsia	I
2398345099873569	28	168	77	27.3	40	prime with pre ecclampsia	preeeclamspia	II
239212300 23879	33	159	68	26.9	34+3	pre ecclampsia ,previous L	preecclampsia	II
239212300 23144	28	156	56	23	38	preeclampsia	preecclampsia	II
2392123567890665	28	159	88	34.9	37+6	primi with preecclampsia	preecclampsia	II
2392134679908587	28	160	77	30	34	primi severe preecclampsi	severe preeeclam	III
2392100234890889	21	160	78	30.4	37	Primi with pre ecclampsia	preecclampsia	II
2392100346678889	37	158	69	27.7	34	Severe preecclampsia	severe preeeclam	II
2392130008547968	30	160	60	23.4	39+6	failed induction,preecclam	preecclampsia	I
2392189000134789	37	158	67	29.7	34	Severe preecclampsia	severe preeeclam	II
2392100002378908	30	160	60	23.4	39+6	failed induction,preecclam	preeclampsia	II
2392123004589397	22	155	60	25	39	Primi with severe preeccla	preecclampsia	II
2392123679799799	24	156	69	28.3	34	Primi with severe preeccla	preecclampsia	II
2392123000045213	24	160	60	23.4	37	preeclampsia,PROM	preeclampsia	I
2392123009008979	24	156	69	28.3	34	Primi with severe preeccla	preecclampsia	III
2392123000023098	31	154	60	27	36+3	Primi with Preeeclampsia	Preecclampsia	II
2392123002300876	32	154	68	28.6	37+3	Preecclampsia	Preecclampsia	II
2392134678908687	37	158	67	26.9	34	Severe preecclampsia	severe preeeclam	III
2392123678906798	30	160	60	20.2	39+6	failed induction,preecclam	preeclampsia	II
23921679087770078	22	155	50	20.8	39	Primi with severe preeccla	preecclampsia	II
2392134679908587	28	160	67	26.1	34	primi severe preecclampsi	severe preeeclam	II
2392100234890889	21	160	78	30.4	37	Primi with pre ecclampsia	preecclampsia	II
2392100346678889	37	158	65	26.1	34	Severe preecclampsia	severe preeeclam	II
2392130008547968	30	160	60	23.4	39+6	failed induction,preecclam	preeclampsia	II
23921230092305678	37	158	60	24	34	Severe preecclampsia	severe preeeclam	II
2392123008790876	22	155	60	25	39	Primi with severe preeccla	preecclampsia	II
2392123006789798	21	160	56	21.8	37	Primi with pre ecclampsia	preecclampsia	II
2392123004589087	21	160	60	23.4	37	Primi with pre ecclampsia	preecclampsia	I
2392123000023098	31	154	67	28.2	36+3	Primi with Preeeclampsia	Preecclampsia	II
2398345099873568	28	168	57	20.2	40	prime with pre ecclampsia	preeeclamspia	II

78	90	3.1		124	88	52	91	13
70	84	2.1		70	104	66	78	3.6
112	128	2.1		108	156	98	117	2.8
78	90	3.1		124	88	52	91	13
70	84	2.1		70	104	66	78	3.6
88	108	3.1		72	138	90	106	2.8
120	136	2.9		104	168	110	129	3.1
94	109	2.9		100	138	88	104	3.1
120	139	2.6		90	174	122	140	3.1
110	123	3.3		90	148	100	116	3.8
120	139	2.6		90	174	122	140	3.1
110	123	3.3		90	148	100	116	3.8
90	116	2.3		92	148	110	122	2.8
110	132	2.8		80	170	110	130	3.1
90	106	2.2		108	138	100	112	2.4
110	132	2.8		80	170	110	130	3.1
98	118	2.8		92	148	90	109	3.1
98	114	3.1		90	138	94	108	3.2
120	139	2.6		90	174	122	140	3.1
110	123	3.3		90	148	100	116	3.8
90	116	2.3		92	148	110	122	2.8
120	136	2.9		104	168	110	129	3.1
94	109	2.9		100	138	88	104	3.1
120	139	2.6		90	174	122	140	3.1
110	123	3.3		90	148	100	116	3.8
120	139	2.6		90	174	122	140	3.1
90	116	2.3		92	148	110	122	2.8
94	109	2.9		100	138	88	104	3.1
94	109	2.9		100	138	88	104	3.1
98	118	2.8		92	148	90	109	3.1
112	128	2.1		108	156	98	117	2.8

270ml	118	94	60	72	11		330ml	104
150ml	80	98	60	72	6.5		220ml	88
100ml	102	150	94	112	3.1		200ml	108
270ml	118	94	60	72	11		330ml	104
150ml	80	98	60	72	6.5		220ml	88
200ml	74	138	90	106	2.9		300ml	78
280ml	100	160	110	126	3.3		400ml	100
220ml	100	130	98	108	3.1		300ml	98
250ml	88	170	118	135	3.3		330ml	90
200ml	94	140	110	120	3.9		300ml	90
250ml	88	170	118	135	3.3		330ml	90
200ml	94	140	110	120	3.9		300ml	90
300ml	90	140	90	106	3.1		450ml	90
280ml	80	168	112	130	3.4		400ml	80
330ml	108	130	76	94	2.6		450ml	108
280ml	80	168	112	130	3.4		400ml	80
300ml	94	146	90	108	3.3		450ml	98
300ml	88	129	88	101	2.9		400ml	86
250ml	88	170	118	135	3.3		330ml	90
200ml	94	140	110	120	3.9		300ml	90
300ml	90	140	90	106	3.1		450ml	90
280ml	100	160	110	126	3.3		400ml	100
220ml	100	130	98	108	3.1		300ml	98
250ml	88	170	118	135	3.3		330ml	90
200ml	94	140	110	120	3.9		300ml	90
250ml	88	170	118	135	3.3		330ml	90
300ml	90	140	90	106	3.1		450ml	90
220ml	100	130	98	108	3.1		300ml	98
220ml	100	130	98	108	3.1		300ml	98
300ml	94	146	90	108	3.3		450ml	98
100ml	102	150	94	112	3.1		200ml	108

104	70	83	7		500ml	112	108	88	95
96	60	72	6.8		300ml	70	104	80	88
144	90	106	3.3		400ml	104	148	98	114
104	70	83	7		500ml	112	108	88	95
96	60	72	6.8		300ml	70	104	80	88
130	98	108	2.9		450ml	77	130	98	108
168	100	122	3.1		450ml	104	164	114	130
134	98	110	3.1		400ml	100	132	96	108
168	122	137	4		450ml	90	169	110	129
140	116	124	3.3		400ml	94	138	95	109
168	122	137	4		450ml	90	169	110	129
140	116	124	3.3		400ml	94	138	95	109
148	98	114	3.3		600ml	88	148	100	116
168	110	128	3.6		600ml	88	160	110	126
128	78	94	3.1		600ml	100	124	78	93
168	110	128	3.6		600ml	88	160	110	126
148	98	114	3.2		500ml	96	143	92	109
134	98	110	2.9		550ml	90	130	88	102
168	122	137	4		450ml	90	169	110	129
140	116	124	3.3		400ml	94	138	95	109
148	98	114	3.3		600ml	88	148	100	116
168	100	122	3.1		450ml	104	164	114	130
134	98	110	3.1		400ml	100	132	96	108
168	122	137	4		450ml	90	169	110	129
140	116	124	3.3		400ml	94	138	95	109
168	122	137	4		450ml	90	169	110	129
148	98	114	3.3		600ml	88	148	100	116
134	98	110	3.1		400ml	100	132	96	108
134	98	110	3.1		400ml	100	132	96	108
148	98	114	3.2		500ml	96	143	92	109
144	90	106	3.3		400ml	104	148	98	114

	102	114	70	83	5.6		1000ml	104	114	72
	77	114	74	87	4		1000ml	76	112	80
	109	150	90	110	3.8		700ml	108	154	94
	102	114	70	83	5.6		1000ml	104	114	72
	77	114	74	87	4		1000ml	76	112	80
	78	138	100	112	2.8		800ml	80	134	94
	100	160	118	132	2.9		800ml	104	168	110
	104	138	108	118	3.9		800ml	110	130	80
	90	170	124	139	3.3		800ml	90	172	114
	104	138	110	119	3.4		890ml	100	138	90
	90	170	124	139	3.3		800ml	90	172	114
	104	138	110	119	3.4		890ml	100	138	90
	92	140	88	105	4.8		1000ml	90	139	100
	86	154	110	124	3.3		1000ml	84	160	120
	102	138	98	111	3.8		1200ml	100	126	88
	86	154	110	124	3.3		1000ml	84	160	120
	98	148	94	112	3.6		1100ml	96	148	94
	88	140	96	110	2.8		850ml	90	138	90
	90	170	124	139	3.3		800ml	90	172	114
	104	138	110	119	3.4		890ml	100	138	90
	92	140	88	105	4.8		1000ml	90	139	100
	100	160	118	132	2.9		800ml	104	168	110
	104	138	108	118	3.9		800ml	110	130	80
	90	170	124	139	3.3		800ml	90	172	114
	104	138	110	119	3.4		890ml	100	138	90
	90	170	124	139	3.3		800ml	90	172	114
	92	140	88	105	4.8		1000ml	90	139	100
	104	138	108	118	3.9		800ml	110	130	80
	104	138	108	118	3.9		800ml	110	130	80
	98	148	94	112	3.6		1100ml	96	148	94
	109	150	90	110	3.8		700ml	108	154	94

8.8		800ml	104	118	70	106	5.4		850ml
5.6		500ml	72	100	60	73	4.8		750ml
3.3		450ml	111	145	95	111	3.4		560ml
8.8		800ml	104	118	70	106	5.4		850ml
5.6		500ml	72	100	60	73	4.8		750ml
3.1		600ml	77	134	94	107	3.1		700ml
2.9		700ml	100	158	112	127	3.1		750ml
3.1		500ml	103	138	100	113	3.3		700ml
3.9		500ml	90	160	110	126	4.1		670ml
4.2		500ml	90	140	98	112	3.8		700ml
3.9		500ml	90	160	110	126	4.1		670ml
4.2		500ml	90	140	98	112	3.8		700ml
4		790ml	90	148	98	114	4.5		900ml
2.9		750ml	88	158	110	126	3.1		900ml
3.3		780ml	102	128	68	88	3.7		900ml
2.9		750ml	88	158	110	126	3.1		900ml
3.5		700ml	90	146	90	108	3.8		900ml
3.1		650ml	90	138	90	106	3.5		750ml
3.9		500ml	90	160	110	126	4.1		670ml
4.2		500ml	90	140	98	112	3.8		700ml
4		790ml	90	148	98	114	4.5		900ml
2.9		700ml	100	158	112	127	3.1		750ml
3.1		500ml	103	138	100	113	3.3		700ml
3.9		500ml	90	160	110	126	4.1		670ml
4.2		500ml	90	140	98	112	3.8		700ml
3.9		500ml	90	160	110	126	4.1		670ml
4		790ml	90	148	98	114	4.5		900ml
3.1		500ml	103	138	100	113	3.3		700ml
3.1		500ml	103	138	100	113	3.3		700ml
3.5		700ml	90	146	90	108	3.8		900ml
3.3		450ml	111	145	95	111	3.4		560ml

	1 hr	yes	no	6mg	2	3.4kg	8	10
	54 mins	no	no	no	no	2.6kg	7	8
	1:15 minutes	no	no	no	no	3.2 kg	7	7
	1 hr	yes	no	6mg	2	3.4kg	8	10
	54 mins	no	no	no	no	2.6kg	7	8
	1:22 mins	no	no	no	no	2.9kg	8	9
	1:11 mins	no	no	no	no	3.1kg	7	8
	1:14mins	no	no	no	no	3.3kg	8	8
	1:40mins	no	no	no	no	1.9kg	7	7
	1:18mins	no	no	no	no	2.1kg	7	8
	1:40mins	no	no	no	no	1.9kg	7	7
	1:18mins	no	no	no	no	2.1kg	7	8
	1:04mins	no	no	no	no	2.9kg	8	9
	59mins	no	no	no	no	2.7kg	8	8
	1:22mins	no	no	no	no	3.7kg	8	8
	59mins	no	no	no	no	2.7kg	8	8
	1:30mins	no	no	no	no	2.8kg	8	9
	1:15mins	no	no	no	no	2.2kg	8	9
	1:40mins	no	no	no	no	1.9kg	7	7
	1:18mins	no	no	no	no	2.1kg	7	8
	1:04mins	no	no	no	no	2.9kg	8	9
	1:11 mins	no	no	no	no	3.1kg	7	8
	1:14mins	no	no	no	no	3.3kg	8	8
	1:40mins	no	no	no	no	1.9kg	7	7
	1:18mins	no	no	no	no	2.1kg	7	8
	1:40mins	no	no	no	no	1.9kg	7	7
	1:04mins	no	no	no	no	2.9kg	8	9
	1:14mins	no	no	no	no	3.3kg	8	8
	1:14mins	no	no	no	no	3.3kg	8	8
	1:30mins	no	no	no	no	2.8kg	8	9
	1:15 minutes	no	no	no	no	3.2 kg	7	7

2	86	5.6		1200ml	2.2	15mins	20 IU
0	91	3.8		1200ml	2.2	18mins	30 IU
4	114	3.3		800ml	2.2	19mins	20 IU
2	86	5.6		1200ml	2.2	15mins	20 IU
0	91	3.8		1200ml	2.2	18mins	30 IU
4	107	3.3		900ml	2.2	29mins	20 IU
0	129	3		900ml	2.2	23mins	20 IU
0	96	4		880ml	2.2	27mins	20IU
4	133	3.6		1000ml	2.2	34mins	20IU
0	106	3.5		1000ml	2.2	31mins	40IU
4	133	3.6		1000ml	2.2	34mins	20IU
0	106	3.5		1000ml	2.2	31mins	40IU
0	113	4.9		1100ml	2.2	24mins	20IU
0	133	3.6		12000ml	2.2	28mins	20IU
8	100	3.2		1300ml	2.2	25mins	20IU
0	133	3.6		12000ml	2.2	28mins	20IU
4	112	3.3		1300ml	2.2	35mins	20IU
0	106	3.1		1000ml	2.2	37mins	30IU
4	133	3.6		1000ml	2.2	34mins	20IU
0	106	3.5		1000ml	2.2	31mins	40IU
0	113	4.9		1100ml	2.2	24mins	20IU
0	129	3		900ml	2.2	23mins	20 IU
0	96	4		880ml	2.2	27mins	20IU
4	133	3.6		1000ml	2.2	34mins	20IU
0	106	3.5		1000ml	2.2	31mins	40IU
4	133	3.6		1000ml	2.2	34mins	20IU
0	113	4.9		1100ml	2.2	24mins	20IU
0	96	4		880ml	2.2	27mins	20IU
0	96	4		880ml	2.2	27mins	20IU
4	112	3.3		1300ml	2.2	35mins	20IU
4	114	3.3		800ml	2.2	19mins	20 IU